

A M A T E U R R A D I O

SEPTEMBER 1962



Vol. 30, No. 9



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OUR COVER

An engineer is shown testing a versatile two channel tape recorder exhibited at the recent International Audio Festival and Fair in London. This new professional transportable recorder is equally suitable for recording chamber music as the roaring blast of a jet aero engine. (Photo by courtesy of the United Kingdom Information Service in Australia.)

FEDERAL COMMENT



I.T.U. PLANNING

As another year draws towards its close, we come nearer to the next I.T.U. Conference. Although a definite date has not yet been set for its time or venue, present indications are that it will probably be held some time in 1965. Irrespective of when it would commence, some discussion took place at the recent Federal Convention in Perth as to the Institute's preparedness for this event and what Federal Council action was to be taken.

It is obvious to every Amateur who stops to think about it that Amateur frequencies will again be under fire from other Services and will probably be harder pressed than in 1959. We came out of the last battle reasonably well when everything is considered, but we can ill afford to be complacent about our status in Australia or the support of our American contemporaries. We must be prepared to fight our own battles. We can only do this effectively if we again send a representative to Geneva or wherever the Conference is to be held.

No one will deny that we may have fared a lot worse if the late John Moyle had not been present in Geneva to represent the Institute and carry our battle into the front line. His personal diplomacy, discussions behind the scenes with other representatives, lobbying where necessary and particular knowledge of all the problems involved were contributing factors in the Australian Amateur's rise in status with the authorities and the at least partially successful prosecution of our aims.

It is therefore equally true that we must be represented once more, and to this end, planning is already in hand to determine the best and most effective way of again raising sufficient funds to send another representative. Who this representative may be is a matter for the future but you may rest assured that we will again have the best man that is available at the time. This is, however, not our main concern at this juncture—we must first raise sufficient funds to enable us to send one.

Premature action in any fund-raising scheme of this nature can easily kill it if it is not properly organised, although donations at any time for this purpose would always be welcomed. But until this has been fully discussed by Federal Council and a policy determined, individual organising attempts may be largely wasted. We know from past experience that when the case is put fairly and squarely before the average member and non-member, he will rise to the occasion as he did before, and give his wholehearted support to the financing of the representative to protect his interests and hobby. At the appropriate time, the "green light" will mark the opening of a nation-wide appeal.

—FEDERAL EXECUTIVE, W.I.A.

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MATTERS—MOBILE

PART TWO

K. WOODWARD,* VK2ZAU

MOBILE AERIALS

V.H.F. AERIALS

If the previous sections have not caused fires of wrath to descend upon the author's head, this should finish the job. Firstly, we will tackle the problem of v.h.f. aerials. The simplest mobile aerial is a quarter wave whip (not on 7 Mc. please) and a short discussion on achieving the best results from these will not be out of place.

The impedance of a ground-plane aerial will give good matching when fed with 39 ohm coaxial cable. This cable is commercially available, but should your Scots blood prevail, use two lengths of 72 ohm coax. In parallel. The approximate lengths for a quarter wave whip on 50 and 14 Mc. are 55 and 19 inches respectively.



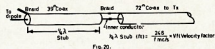
Now should you wish to use 52 or 72 ohm coax. to feed your whip, you can do so and achieve very close matching with the following method. As illustrated in Fig. 18 a variable capacitor is placed in series with the inner conductor feed to the whip, but the length of the whip must be altered. The approximate lengths would be—50 Mc.: 52 ohm coax., 66½"; 72 ohm coax., 73½". 14 Mc.: 52 ohm coax., 23½"; 72 ohm coax., 2½". The whip should be adjustable in length and varied as well as the variable capacitor to give maximum radiated field strength. This is, of course, where your field strength meter will be invaluable.

When testing a ground plane aerial use a vertical whip on the field strength meter, and when testing beams (horizontal) use a horizontal dipole. When you make an adjustment to your aerial do not forget to re-peak your transmitter output, watching the field strength meter for maximum output.

For field days you will want to make provision for v.h.f. beams and Fig. 19 illustrates the one used by the author with considerable success. This beam converts from 2 metres to 6 metres for stationary operation, but the 2 metre

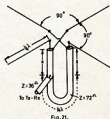
section has travelled at 50 m.p.h. on country roads. The original beam has snap-in type elements, but there is no reason why extension pieces could not be engineered for the radiator and D2 of the 2 metre beam.

A folded dipole as the radiator would give a good match to 72 ohm coax. feeder, but the author prefers the original method of matching with a quarter wave stub. This stub, illustrated in Fig. 20, is made of 39 ohm coax., the lengths being—50 Mc., approx. 39"; and 144 Mc., approx. 13½". In practice, except for the most stringent conditions, the 50 Mc. stub is left on permanently as it does give a fair match on 144 Mc.



The velocity factor for coaxial cable can be taken as 0.66 when calculating the quarter wave stub. The four element beam on two metres will give an approximate power gain of eight times and if designed for 50 (with the 0.2 wavelength spacing) would make an excellent home station beam. The two element beam on 50 Mc. gives an approximate power gain of three times.

In v.h.f. mobile aerials, one which has no gain but permits fairly circular horizontal coverage is the turnstile. This aerial illustrated in Fig. 21 is simple to make and to match, and will give better results than a quarter wave whip when working horizontally polarised home stations. Incidentally, at least one Sydney home station has been using a similar aerial on 2 metres with very good results. The two distances X are not important as long as they are of equal length. The correct phasing being achieved by the extra quarter wavelength on one set of dipoles. This quarter wavelength should be calculated as for a quarter wave stub and would be approximately 13½" at 144.5 Mc. The feeder cable could be two parallel lengths of 72 coaxial cable.



To finish the discussion of v.h.f. aerials, it must be pointed out that the most efficient position for a whip is in the middle of the roof. If you do not wish to cut a hole in your roof, it may be possible to fix a metallic base plate to your whip and fasten it to the roof with rubber suckers. Remember that

if you mount the whip on your mudguards endeavour, wherever possible, not to get your car body between the whip and the station being worked.

First choice is the roof, second choice can often be the centre of the boot lid, third choice is the mudguards. If you have an external metallic sunvisor these often make a good mounting place for a v.h.f. whip. When sitting your whip other than on the roof, try for a removable ornament or drill your holes so they can be used for a normal car aerial or side-vision mirror, etc., when the car is to be sold.

7 Mc. AERIALS

A book could be written on this topic alone as there are so many approaches to the manufacture of an efficient 7 Mc. mobile aerial. Firstly, the spiral whip, secondly the base-loaded whip, and thirdly the centre-loaded whip. We will deal only with the centre-loaded whip. The most important factor in this aerial is the loading coil. It should have the highest possible Q with smallest dimensions, thus reducing to a minimum air-resistance.

We will assume a whip of 8 feet, 3 feet at the base and 5 feet above the loading coil. The loading coil suggested for 40 metres is approximately 32 microhenries, wound as follows: 30 turns of 14 gauge enamelled wire, 2½" in diameter, approximately 5" long. This coil should ideally be air-wound, rib supported. However, should this be impossible, the best insulator possible should be used, polystyrene, etc., remembering any loss in this coil makes a very big loss in radiation efficiency.

With the aerial installed and the transmitter operating, the top section of the whip should be adjusted to give maximum radiated signal. If the coil has been wound correctly, this need not be touched, however in no circumstances whatever leave a shorted turn on the coil or introduce any unnecessary metallic objects. Remember after each adjustment to the whip, to re-peak your transmitter before noting the exact radiated field strength.

The approximate radiation resistance of this whip, depending on installation, will be 10 ohms, so you will readily appreciate that there will be a mismatch with any coaxial feeder used. This can be overcome by placing a capacitor from the base of the whip to ground. It may be necessary to add a turn or two to the centre loading coil, but the necessary adjustment can usually be made by the top section of the whip.

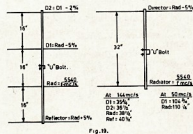
The size of the condenser depends on the impedance of the coaxial cable and the impedance of the aerial, the formula for determining this being as follows:—

$$C = \frac{2 \times \pi \times f \times R_a \times R_r}{10^9}$$

where R_a = impedance of aerial.

R_r = impedance of feeder.

Assuming an aerial impedance of 10 ohms and a feeder of 50 ohms at 7 Mc., the condenser value would be 1,089 pF.



* Flat 28, Block 3, Curtis Place Flats, Moorehead Street, Redfern, N.S.W.

Portion of the calculated capacitor should be made variable to allow final adjustment. Adjust the top portion of the whip to re-resonate the aerial for maximum field strength, then adjust the base capacitor and transmitter tuning for best results. Repeat all adjustments several times. The final capacity may be made up with ordinary receiver-type mica condensers.

Having spent the time to make up this aerial and tune it correctly, should reward you with many pleasant QSOs. Remember that this aerial has a high Q and should be resonated on your favourite operating frequency. If your transmitter is v.f.o. controlled, you can check the exact resonance point of your aerial and operate within ± 30 Kc. of this point for best results.

MOBILE POWER SUPPLIES AND MISCELLANEOUS

This is the last of this series of mobile equipment and we will discuss briefly the fundamental basis of all mobile operation, the power supply.

While good results may be obtained with the humble vibrator power supply, we will look into the use of transistor power supplies and adaption to generators for mobile operation.

TRANSISTOR P.S.

I do not intend to give a circuit for a transistor power supply as an excellent one has been featured by Mullard and details, if not at hand, can be obtained from that company at no obligation. Moreover, the transformer for this power supply, the thing which most people like myself are too lazy to manufacture, may be purchased from an Australian manufacturer (an advertiser in "A.R.") for a reasonable sum. Also you may purchase a complete power supply from two or three sources which give satisfactory results. Whatever your approach, it is handy if possible to obtain a tapped power supply of at least one high and one medium output voltage. It is possible to run your power supply on receive at low h.t. voltage with much lower primary current drain than when transmitting at high h.t. voltage.

Never abuse your transistor power supply. Mount it so that it receives, if possible, a good flow of air current. If not possible at least make sure it is not subjected to a great deal of heat from external sources. Make sure that you connect the correct polarity to the supply and if purchasing same ask for the facility, and the instructions how to change the polarity input—remember you may sell your car some day.

If the power supply is not fused make sure you insert the correct size fuse in the l.t. lead. Normally a transistor power supply fails safe if incorrectly treated, but do not rely on this feature; you may be unlucky and power transistors are not cheap. Although not so critical as vibrators to car voltage, take care that your regulator system is working correctly and the charging voltage is not exceeding approximately 14 volts.

In manufacturing any type of power supply I do recommend the use of silicon rectifiers, OA210s, etc. Most power supplies these days use voltage doubler circuits, thus saving a little

space and weight as far as the transformer is concerned, especially if you are hand-winding same! Illustrated in Fig. 22 is the output filtering and voltage doubling circuit as used in a commercial power supply. The electrolytic condensers are dual types. The reason for the simple filtering is, of course, that the supply is working at audio frequencies, not 50 c.p.s. Should the same voltage doubling circuit be used with a vibrator supply, it may be necessary to replace the first 27 ohm resistor with a choke to obtain efficient filtering.

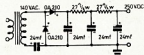


Fig. 22.

The big advantage of the transistor power supply other than conversion efficiency is the absence of radio noise at short wave frequencies as compared with the generator and vibrator power supplies. However, do not be surprised if you try to listen to your portable wireless in the car if you get several birdies on the broadcast band from the transistor power supply.

MODIFICATIONS TO L.F.F. GENERATOR

The following adaption for a generator supply was extracted from VK-22VL by gentle persuasion too horrible to record in this magazine. VK22VL has been using this idea for some years very successfully on the v.h.f. frequencies. Nearly everyone is familiar with the L.F.F. style generator designed for operation of 18 volts but which functions quite well on 12 volts. However, the output voltage of 22 or less, depending on loading, does leave something to be desired. Fortunately this can now be remedied with a little work on the input side of the generator.

As can be seen in Fig. 23 a third brush holder (insulated) has been fitted to the l.t. input of the generator. No wiring changes are to be made. It is simply necessary to ground the original terminal for reception and change this ground over to the new brush holder terminal during transmission periods. The third brush position should be adjusted for best output voltage before fastening securely to the generator frame.

I stress that the third brush be used for intermittent transmitter use only, as

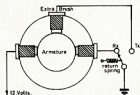


Fig. 23.

depending on the position of the third brush the generator could be run to destruction in approximately one hour continuous running on the third brush due to overheating. This method, however, is OK for normal mobile transmission periods excluding the fox on fox hunts.

FOX-HUNTING AERIAL

Having mentioned the subject of fox hunts, brings us to the first topic in the miscellaneous items, the fox-hunting aerial for 2 metres.

Fox-hunting beams are constructed for maximum back-to-front ratio and whilst most beams used seem to consist of three elements with 0.1 director spacing and 0.15 reflector spacing, the author is not fully in agreement with this system. I prefer a three element beam with 0.1 director spacing and 0.25 reflector spacing, however the element lengths are not cut to standard length as for maximum gain.

The director should be approximately 10% shorter than the radiator and the reflector approximately 7½% greater than the radiator. A sample beam cut for 144.5 Mc. would then be as follows: Director 34½", radiator 38½", reflector 41½"; director spacing 8" and reflector spacing 20". The result looks horribly unbalanced but performs well. A very rough match can be made to coaxial cable with a folded dipole radiator and seems good enough for the purpose of fox-hunting.

In chasing hidden transmitters you must be able to turn your receiver gain right down, preferably at the front-end otherwise when you get very close to the fox you will not be able to get a reasonably true bearing. Of course a good S meter or magic eye is virtually a must. Maybe someone with a good deal of experience in this field will contribute an article on how to beat the experts.

I understand an excellent article on mobile switching, road safety, aerial efficiency, and layout of mobiles is shortly forthcoming, so we will leave these subjects to our fellow author. ●

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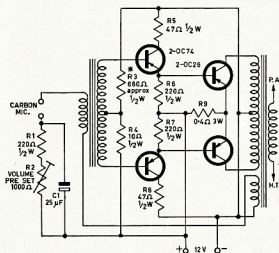
MODIFICATIONS TO MODULATOR DESIGN WITH OC26 TRANSISTORS*

It has been found that under unfavourable circumstances—particularly under sustained drive—the previously described ("Mullard Outlook", Australian Edition, Vol. 3, No. 3, pages 28, 29 [also "A.R." May '61—Editor "A.R."]) "Modulator Design with OC26 Transistors" may be thermally unstable. Leakage currents in the OC74 driver transistors and in the OC26 output transistors may be equally responsible. To guarantee thermal stability under sustained-drive conditions at ambient temperatures of up to 45°C, it is recommended that the following modifications be made:—

Revised Performance Figures

Maximum output power, 1,000 c/s. (10% total harmonic distortion)	14.5 W.
Voltage across input terminals for maximum output power	920 mV.
Input impedance (approx.)	50 ohms
Negative feedback	9 db.

The above concludes the extract from "Mullard Outlook", Australian Edition. Below is an extract from "Info," (VK5 Division Bulletin).



* Adjust base bias for total quiescent current of 40 mA., not including microphone current.

- A resistor of 0.4 ohms (R9 in the accompanying circuit diagram) should be included in the common emitter return of the output transistors.
- To minimise heating of the driver transistors under drive, 47 ohm collector load resistors (R5, R8) should be used.
- The return resistors for OC74-emitter-OC26-base (R6 and R7) should be decreased from 1.2K ohms to 220 ohms.

It should, in addition, be ensured that the 2-OC74 as well as the 2-OC26 have adequate heat sinks—the cooling fins being screwed on to any available flat metal surface.

The use of an emitter resistor in the output stage results in some loss of power and sensitivity, although there is an improvement in the fidelity at moderate power levels. The revised performance figures are as follows:—

Editorial Note.—Looking at the output circuit, we see that, with the original output transformer and load, the collector load on each transistor is the sum of the following.

Emitter Resistor	0.4 ohms
Load Impedance reflected on half primary,	
Load Resist. + Sec. Resist.	
(Turns Ratio) ²	
= $\frac{4225 + 190}{335 \times 4}$	3.3 ohms
Resistance of half primary ..	0.25 ohm
Making a total Resist. Load	3.95 ohms

Allowing a knee voltage of 1 volt in the OC26, i.e. a peak collector swing of 11 volts, the peak current of the OC26 equals $11 \div 3.95$ 2.8 amps. Because of leakage inductance and iron loss the peak current induced into the secondary will be less than $2.8 \div 36.6$ 0.77 amp. And the power into the load will be less than—

$$\frac{0.77 \times 0.77 \times 4225}{2} \dots 12.5 \text{ w.}$$

The iron loss is estimated at 0.25w, therefore if our calculations are correct it would seem that, with two perfectly matched transistors, one expects an output of just over 12 watts, and further, that in order to obtain 15 watts of audio power into the modulated stage, it would be necessary to obtain a more efficient modulation transformer and either—

- Re-design the modulation transformer so that the primary impedance is 10 ohms, i.e. 52 turns per side.
- Reduce the impedance of the modulated stage to 3,160 ohms, or
- Increase the supply voltage to 13.5 volts.

We feel that taking normal variations of components into account, that the modulator would fall more happily into the 10 watt rather than the 15 watt class. We also feel that 0.9 of a volt is quite a bit too much to expect from average microphones, and a preamplifier stage would be necessary, and this, of course, entails a re-design of the input transformer.

COMPUTER "PREVENTS" SHIP COLLISIONS

A computer designed to act as the "eyes and ears" of sea-going vessels and which may virtually eliminate ship collisions, has been developed in the United States.

Designed to tie in with a ship's standard radar system, the marine collision avoidance computer was developed by the Goodyear Aircraft Corporation, Akron, Ohio. A Goodyear spokesman said that the computer would give audible and visual warnings of collision courses, forecasting both relative and true courses of other ships 30 minutes in advance. In addition, the equipment advises the navigator of the necessary evasive action to manoeuvre out of a potentially dangerous location.

With existing ship radar, such information could be obtained only by plotting data obtained from the radar screen on a manoeuvring board, the spokesman said. Use of the computer provides continuous and accurate information without laborious plotting, thus freeing the navigator and other officers for other important duties on the bridge.

Targets are automatically released from the trackers as they leave the 20-mile range or may be manually released by the operator, the Goodyear spokesman added.

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DIVERSITY FOR THE AMATEUR

N. BURTON,* BERS-11494

THE Amateur Radio Service, in common with other Services using the short wave spectrum, has been, and still is, plagued with what is perhaps the most annoying of radio troubles—fading. Other Services have tackled this problem seriously, but apart from automatic gain control, which is only a partial palliative at the best, the Amateur has been notably backward in adopting any form of remedy against this nuisance.

Before the last war at least one commercial firm offered a diversity receiver for Amateur use, but in spite of the modest price, around £160, few Amateurs availed themselves of the benefits this receiver could offer.

The idea of diversity, as is well known, is to utilise the better of at least two signal voltages derived from separate aerials at any one instant, since, at any one instant, the voltages produced in different aerials by the same transmitter will vary widely.

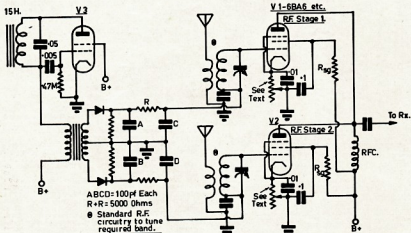
A method was offered some years ago to Amateurs utilising the receiver a.g.c. line to operate a mechanical switch, but as the switching action depended on the uncertainty of a gas triode to trigger the switch, it, if for no other reason than this, failed to gain popularity.

The position today remains the same; fading is still with us and any Amateur today wishing to purchase a diversity receiver will find that the ones available commercially are meant for point to point w.t. or r.t. working and hence are ill adapted to rapid searching of the band. Even if they were suitable for rapid searching, the cost (around £1500) is such that most Amateurs would give a second thought to the matter before purchasing one.

What can we do about the matter then? The answer would seem to be simple and within the means of any Amateur. It is to make our own switching device, but instead of using a

and, dependent upon the cycle, this applied voltage either adds to the standing bias on the valve, so cutting it off else it subtracts from the standing bias, and so allows the valve to conduct. The reverse cycle reverses the operation of the valves and so at any one instant only one aerial is connected to the receiver, but as this changeover occurs 30 times a second, it is rapid enough to provide a much more level audio output from the receiver and renders signals far more pleasant to read and so adds enjoyment to a contact.

Concluding on a practical note, it is suggested that the oscillator be well screened; also the filter components up to the output ends of the two rectifiers, whilst arranging the bias on the r.f. valves at cut off point, or almost so, it can be ensured that the valves do cut off or conduct. As little amplification is needed from these valves, there is no objection to a high standing bias on them.



The aerials may be spaced to obtain the largest voltage difference or they may be of different polarisation, which will produce the same effect, and this latter is perhaps the easiest for the Amateur, and technically for him, the best, since most short wave transmissions suffer varying degrees of rotation of polarisation in the reflections they make on their journey from the far point. It follows then that one aerial can be the normal transmitting aerial whilst the other aerial can be a simple dipole arranged vertically.

It is of course impossible to combine the outputs directly due to the phase difference, but some kind of switching from one aerial to the other allows the better signal to be used at any one instant. The switching could, of course, be done by hand when, aurally, the signal began to fall, but this method is hardly practical and is hardly in keeping with good practice.

clumsy mechanical switch, to do the job elegantly, automatically and electronically.

Referring to the circuit, it will be seen that two aerials have been fed into separate r.f. amplifier valves and that these r.f. amplifiers share a common anode load and output condenser. This departs little from normal practice with the exception of the common anode load and this will explain itself as we proceed. The remaining valve is the odd man out. Close examination reveals this to be an oscillator of very low frequency—the values indicated set this frequency around 30 c.p.s. The output from this oscillator is fed via a Class B transformer into a pair of suitable small metal rectifiers at whose output, across the load resistors, appears a voltage which, after smoothing is applied, as would be a.v.c. to the grids of the two r.f. amplifiers.

The working is as follows: At any one instant one of the rectifiers applies a voltage to the grid of one of the valves

NEW W.I.A. QSL BUREAU ADDRESS

Members are asked to note the new address for the Wireless Institute of Australia Federal QSL Bureau. It is also requested that VK stations, when in contact with DX stations, inform them of the new address so that the widest publicity can be given to this matter.

The following address should be used forthwith for all QSL Bureau business only:—

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FREQUENCY PREDICTION CHARTS

The Frequency Prediction Charts were discontinued due to space demands and the fact that it was considered they were of little interest. These Charts will be re-introduced as soon as suitable data is again available to "A.R."

The Publications Committee requests readers interested in these Charts to advise how they would like the data presented. Regrettably, cost prohibits their presentation in graphical form.

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75-WATT MODULATOR

THE modulator circuit is based on information appearing originally in R.C.A. "Ham Tips," re-printed in "Amateur Radio" (August 1948 and August 1960) and "Radiotronics" (July-August 1961) showing a method of using 807 valves as zero bias Class B Modulators. Tests have proved that this system produces the results claimed and does this without the usual complications of bias and screen voltages, etc.

Considering the popularity and low price of 807 valves, this circuit has much to commend it.

A complete modulator unit with pre-amplifier was designed, built and tested as a prototype, and all relevant tests were made including actual operation with a 100 watt transmitter. The performance of the modulator was very satisfactory, after one or two modifications were made to the original circuit in order to produce the required frequency response. The pre-amplifier provides sufficient gain for most high impedance type microphones.

● By popular request the following two articles are reprinted as the back issues of "A.R." are no longer available.

Many Amateurs are at a loss to know the best manner to obtain the audio power required to modulate their transmitters. A very good means to obtain 75 watts of audio is the use of 807s (or 1625s) in Class B zero bias.

TEST RESULTS

The frequency response was taken overall from the input of the driver valve to the secondary of the modulation transformer, terminated in a resistive load of 10,000 ohms, and with 100 mA. d.c. through the secondary winding.

At full output of 75 watts the frequency response was within 1.5 db. from 200 to 7,000 c.p.s. The distortion present at full output over the frequency range was quite low and aural tests

showed that the speech quality was excellent.

The response of the pre-amplifier stages can be modified to suit a particular microphone by altering the coupling condenser values and in the case of a crystal microphone by reducing the resistor value from grid to earth on the first valve. It will be noted that the low frequency response falls off below 200 c.p.s., the transformers being designed to aid in this respect.

Reduction of the high frequency response and harmonics produced by the negative peak clipping valve is also desirable, and can be achieved by the use of a filter or to a degree by a suitable by-pass condenser.

It is well known that speech waveform is of a very peaky nature, and this means generally that either a low average modulation level must be tolerated, or some means must be provided to overcome this limitation. Without suitable precautions, an increase of the audio gain above a certain level will cause some of the higher negative voltage peaks at the modulation transformer secondary to exceed the final

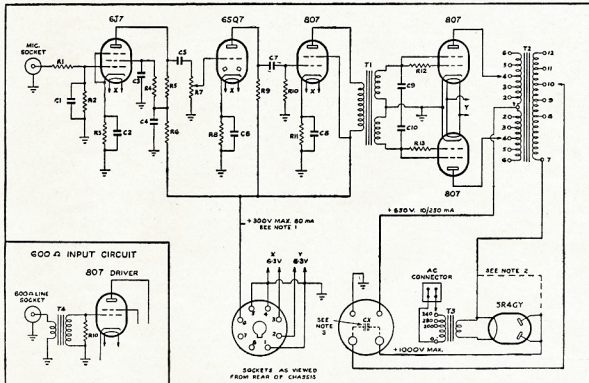


Fig. 1.—Circuit of 75 Watt Modulator.

T1—Type IT388 A. & R. Transformer.
T2—Type MT15A " "
T3—Type FT1516 " "
T4—600 ohm input transformer.
C1—50 pF. mica.
C2, C8, C9—10 pF. 40 v.p.
C3—0.1 μF. 200 v.v.
C4—8 μF. 525 v.v.

C5, C7—0.01 μF. mica.
C9, C10—400 pF. mica.
C11—2,000 volt working, see text.
R1—20,000 ohms, ½ w.
R2—5 megohms, ½ w.
R3—1,500 ohms, ½ w.
R4—1.5 megohms, ½ w.
R5—0.25 megohm, ½ w.

R6—50,000 ohms, ½ w.
R7—0.5 megohm pot.
R8—5,000 ohms, 1 w.
R9—0.25 megohm, ½ w.
R10—0.5 megohm, ½ w.
R11—225 ohms, 3 w.
R12, R13—25,000 ohms, 1 w.

NOTES

1. If voltage exceeds 300, reduce with a resistor and by-pass with 8 μF. condenser.
2. Short circuit plates to filament if negative peak clipper is not required.
3. Up to 0.01 μF. by-pass may be required (inc. r.f. by-pass).

r.f. stage d.c. plate voltage. This will reduce the effective voltage acting on the r.f. stage to zero for the period of time that there is no positive voltage applied, thus causing discontinuity of the carrier power and so-called splatter takes place.

Volume compression and a.m.c. circuits reduce the peaks and increase the average modulation, but the time constants normally used allow high speed speech peaks of some frequencies to pass through to the modulator output circuit. The solution to this is to add a high level negative peak clipping valve with a low pass filter following.

The negative peak clipping circuit is included in the modulator so that those who use the equipment will be provided with the basis for possible improvement of their transmissions if they desire a high average modulation level with minimum interference to other stations.

It is not claimed that the best results will be possible without a low pass filter between the modulation transformer and the r.f. final stage of the transmitter, although useful suppression of high frequency response can be obtained by providing as large a capacitance as possible (2,000 v.v.) in the position marked CX in the circuit.

A filter, if used, will carry the final stage d.c. current and the audio frequency currents. The condensers and reactors should be able to withstand the maximum working voltage continuously; i.e., approximately 2,000 volts r.m.s. at full audio output and 1,000 volts d.c. It is best to use "air core" reactors for the reason that less trouble will be experienced from noise operation under heavy modulation.

Details of the design and operation of suitable filters, and of other methods of reducing the i.f. channel width will be found in "QST," April 1948; R.S.G.B. Bulletin, February 1949, and in other publications.

VALVE LINE-UP

The modulator includes pre-amplifier stages, and is intended for use with a high impedance microphone. The overall gain is more than sufficient for full output using a D104 type crystal microphone.

A 6J7 metal valve was used in the original unit, and should this type be difficult to obtain, a 6J7G would be quite suitable if provided with a metal shield to completely enclose the valve,

grid resistor and r.f. filter circuit. A single ended valve, such as a 6SJ7 is not recommended.

The second valve is a high gain triode type 6SQ7, and this valve and the following valves are readily obtainable.

It was found that a single 807 valve as a tetrode provided adequate driving power for the modulator valves, when used as shown in the circuit diagram. Negative feedback was not necessary, as the distortion visible on the c.r.o. screen was not excessive at 75 watts output, over the voice frequency range for which the unit was designed.

The driver transformer is a type specially designed for use in this circuit, but the modulation transformer is a semi-universal type suitable for use with many other Class A, AB1, AB2, or B circuits, using such valves as 807s, 809s, 830Bs, etc. The maximum signal modulator valve plate current should not exceed 150 mA. d.c. per side of c.t. on the primary side, and the d.c. current through the secondary should not exceed 150 mA. A maximum d.c. voltage of 1,000 may be applied to the primary and/or secondary windings.

MODULATION TRANSFORMER IMPEDANCES

PRIMARY	SECONDARY
1 H.T. +	7-8 4,000 ohms
2-2 3,800 ohms	7-9 5,000 "
3-3 5,000 "	7-10 6,000 "
4-4 6,600 "	7-11 8,000 "
5-5 8,500 "	7-12 10,000 "
6-6 10,000 "	

The modulation transformer is fitted with a spark gap to provide protection against excessive peak voltages which may occur in the event of loss or reduction of load during transmitter adjustment or tuning operations. This gap should be carefully adjusted so that during full modulation the points are as close as possible, but do not spark over under normal peaks.

The modulation transformer has been carefully designed and is not likely to break down with normal use if the maximum voltage and current ratings are not exceeded. The primary and secondary impedance ranges should be suitable for most modulator and transmitter valve combinations usual with a transformer of 75 watts rating.

POWER SUPPLY

It is necessary now to point out that full power output with low distortion from this or similar audio equipment, is not possible without power supplies having the necessary voltage regulation under minimum to maximum signal conditions.

The power supply for the pre-amplifier and driver stages should provide 275/300 volts at about 80 mA. with sufficient filament windings for all valves (except the 5R4GY). It is advisable to check the filament voltages at the valve sockets, as low voltage, particularly on 807 valves, is to be avoided.

The power supply for the modulator valves is most important, and should be a separate unit with good regulation. The voltage output should be approximately 650 volts at the no signal current of 10 mA. and should not drop to less than about 600 volts if full output of 75 watts is required, the maximum signal current for both valves being approximately 220 mA. It is possible to use up to 750 volts (maximum at no signal) on the valves, and obtain the power output with poorer power supply regulation. A power supply with good regulation and additional current capacity may also be used for both the modulator valves and the Class C final r.f. amplifier.

The degree of voltage regulation required can be obtained by using 868A rectifier valves, with a choke input filter (preferably a swinging choke) and a second filter choke, both with low d.c. resistance of the order of 50-60 ohms. The filter condensers may be 2 μ F. after the first choke and 4 μ F. after the second choke.

When wiring the modulator, make all earth connections to a bus-bar, and earth at one point only on the chassis.

MODERNISING THE DRIVING STAGES

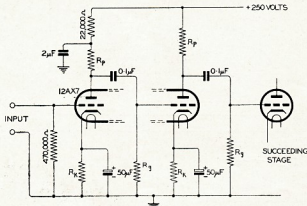
The 6SQ7 can be replaced by a 6AV6 or one section of a 12AX7, and the 6J7 by a 6BR7 or EF86 or similar low noise pentode.

Alternatively, the 6J7 and 6SQ7 can be replaced by a 12AX7 with both sections in cascade if the microphone has sufficient output.

Fig. 2 is from the S.T.C. Valve Data Handbook, Vol. 2. It is necessary to use separate cathode bias resistors and condensers and suitable plate decoupling. Plate and grid leads should be kept short and separated with shielding if required. For voice frequencies, the cathode and coupling condensers can be reduced in value to limit low and high frequency response.

★

Fig. 2.—12AX7 Cascade Amplifier.



	Cond. 1	Cond. 2	Cond. 3	Cond. 4	Cond. 5	Cond. 6
Plate Load Resistance Rp (ohms)	100,000	100,000	220,000	220,000	470,000	470,000
Grid Leak Resistor Rg (ohms)	220,000	470,000	470,000	1M	1M	2.2M
Cathode Bias Resistor Rk (ohms)	1,500	1,500	3,300	3,300	6,800	6,800
Max. r.m.s. output voltage at 1 kc. for 5% total harmonic distortion	27	31	25	32	26	32
Voltage gain at 1 kc.	2,080	2,420	2,940	3,270	3,420	3,590

DRIVING THE ZERO BIAS 807s

NOWADAYS it is quite common to hear a contact on phone and say, "I am using 807s in zero bias as modulators OM," and find another convert to using our "Maid of all work," the 807, in a new job.

This is quite understandable, for used in zero bias, the 807 is completely tamed, and parasitics are non-existent. For those who have not got access to the original article, it may be as well to run briefly over the circuit, shown at "A" in Fig. 1.

The centre tap of the driver transformer is grounded, and the ends of the secondary windings connected to the screens of the 807s. A 20,000 ohm resistor is connected between the screen and grid as shown, and the plates of the 807s are fed to the conventional modulation transformer. The cathodes of both 807s are grounded.

With this circuit, the driver transformer was the catch, as it had to match the driver tube to the grids of the 807s which had an almost constant impedance of 14,200 ohms, grid to grid. In addition, to obtain 120 watts of audio it was necessary to use a driver which would supply 5 watts of drive to the grids; this meant a pair of 2A3s or equivalent, after allowing for transformer losses, etc.

In our applications, 120 watts is not required, and therefore the most popular arrangement has been to use a 6L6G as driver, which allows us to obtain at least 75 watts of audio, and for lower audio requirements, a 6V6 or 6F6 was adequate. Obviously then, with zero bias 807s, the harder we drive them, the more we get out, up to their limit of 120 watts, provided of course, that our plate voltage, regulation, and impedance match are correct.

Ahead of the driver, we need the usual voltage stages to lift the gain from the microphone to give a voltage which will enable the driver to operate at its correct output. With a crystal microphone, this is about two stages, or with a carbon microphone, one stage.

So much for the circuit as originally described, and now to the circuit described in February 1950 "CQ," shown in "B" Fig. 1.

T1 is a conventional plate-to-push-pull input transformer, such as the type used to feed a 6C5 to a pair of 2A3s; in other words, an ordinary voltage transformer (most of us have a transformer of this type lying about). The centre tap of the transformer is grounded, and the ends of the secondary fed to the grids of a 6SN7, which operates as two cathode followers. The cathodes are not grounded, but are connected as shown to the 807 screens and grids.

The plates of the cathode followers are tied together, by-passed, and supplied with 300 volts. The remainder of the circuit is the same as "A".

Conventional methods of producing driving power in circuit "A" Fig. 1 would involve power consumption largely cancelling the power economy advantages of the Class B operation. Such power need be supplied to each grid only on its positive half of the cycle, however, the cathode follower driver is a natural.

Note there is no connection from the 6SN7 cathodes to ground, except through the grids and screens of the 807s. Thus the plate current flowing in the 6SN7s is equal to the grid and screen current of the 807s, and varies from less than 1 mA. to peaks of 20 mA. with voice modulation. Actually the total current of a 6SJ7 pre-amplifier, 6SN7 two-stage resistance coupled triode amplifier, and the 6SN7 cathode follower stage totals less than 10 mA. under static conditions. Since the driver section works on about 250 volts, its plate power as well as that of the two voltage stages is obtained from the one supply.

Actually the direct-coupled cathode followers supply approximately 10 volts of positive bias with resultant total static plate current on the 807s of 30 mA. Of course with modulation, this plate current increases to 80 to 150 mA., depending on the output required.

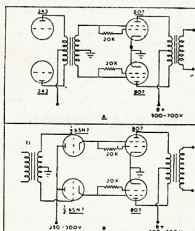


Fig. 1.

The voltage stages required ahead of T1 are important, and it is necessary to see that sufficient voltage is supplied to the primary of T1, otherwise the power output from the 807 stage will be inadequate.

It is recommended that the minimum required from a crystal microphone would be: a 6SJ7 high gain amplifier, followed by two triode sections of a 6SN7 as resistance coupled triodes. In the writer's case the voltage stages used were:—

Pre-amplifier on operating tube, 6SJ7 and 6J5 to 500 ohm line, 6SN7 as two resistance coupled amplifiers, feeding T1, cathode followers and then the 807s Class B stage. From the 500 ohm line, all other stages are in the main rack of the transmitter. With this line-up, the gain control is one-fourth on for 100% plate modulation of a 50 watt power amplifier, i.e. 25 watts of audio. The meter reading the combined plate currents of the 807s varies from a resting current of 30 mA. to about 80 mA. on peaks, which means that for 25 watts of audio, the 807s are simply loafing along. The plate to plate im-

pedance was 10,200 ohms, and the plate voltage 500 volts, rather poorly regulated.

IMPEDANCE OF CLASS B STAGE

The following plate-to-plate impedances for the 807 Class B stage are appended for readers who have not a copy of the original article.

Case	1	2	3
Plate Volts	750	600	500
Plate to Plate load	6650	5050	4000 ohms
Output	120	90	72 watts
Max. av. anode current (two valves)	240	240	240 mA.

Note.—If the Class B stage is run at lower plate currents or voltages, the plate to plate impedance will be different. The calculations are very simple with the following method, which is accurate enough for our requirements.

CALCULATING IMPEDANCE

In a Class B stage at any instant the grid of one tube will be driven positive and the other tube driven past cut off, and therefore in calculating impedances we need only consider one tube. As far as the one tube is concerned the primary of the output transformer is a resistance and therefore we have this plate load (R_p) and the resistance of the Class B tube in series across the power supply. We can assume that about 80% of the power supply voltage will appear across the plate load R_p as audio voltage, so if our plate supply is 500 volts, 400 volts peak of audio will appear across the plate load R_p . This gives us our voltage for calculation.

Now we want the peak current. Manufacturers' characteristics give the maximum average current for two tubes (sine wave input), so to find the peak current we divide the average current by 0.636. Therefore our peak current for Case 3 in the lists above is: 240 mA. $\div 0.636 = 377$ mA. = 0.377 Amp.

Then from $R = E \div I$ we have: $400 \div 0.377 = 1061$ ohms for one tube.

The plate to plate load for two tubes will be four times this value or 4244 ohms, which is very close to the manufacturers' ratings (Case 3).

The audio output can be found by the simple formula $W = (I \times E) \div 2$ and working on peak values found, we have $(0.377 \times 400) \div 2 = 75$ watts output.

Below is the case of Class B 807s to give 100% modulation of a 50 watt carrier (25 watts of audio). Example: Supply voltage 500 volts.

Av. I_p (2 tubes) = 100 mA. = 0.1 Amp. Then $E_{peak} = (500 \div 2) \times (80 \div 100) = 400$ volts.

(i.e. 80% of supply voltage.)

Peak current $I_p = 0.1 \div 0.636$

= 0.152 Amp.

Plate impedance (one tube) = $E_p \div I_p = 400 \div 0.152 = 2630$ ohms.

Then plate-to-plate impedance = $2630 \times 4 = 10,520$ ohms, and audio output = $(I_p \times E_p) \div 2 = (0.152 \times 400) \div 2 = 30.4$ watts.

—J. C. Duncan, VK3VZ



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40/15,000 c.p.s. 6 watts British Rating, 15 ohm Voice Coil Impedance. £8/3/10 plus Sales Tax 25%.

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500 mA. at 500 p.i.v. 18/6 pair plus Sales Tax 25%.

★ SPIRAL INDOOR

T.V. ANTENNAE

18/9 each plus Sales Tax 25%.

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0-1 mA., 4" square, black case. 67/6 Sales Tax exempt.

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★ INSTRUMENT DIALS

Vernier Drive. Similar to that used in Leader Instruments. 53/4 plus Sales Tax 12½%.

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5", 900 feet, 22/6 plus Sales Tax 12½%.

7", 1200 feet, 45/- plus Sales Tax 12½%.

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Output, Ultra Linear. 6 watts, 8,000 ohms p.p.; 2 ohms secondary. 20/- each plus Sales Tax 25%.

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CARTRIDGES

Turn-over type, c/w. Long Play and Standard Stylus. 18/- plus Sales Tax 25%.

★ ENGLISH CRYSTAL

MICROPHONES

C/w. Lead and Plug. 17/6 plus Sales Tax 12½%.

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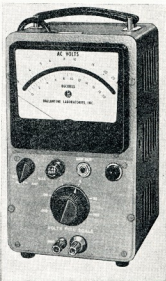
CALCULATING INPUT IMPEDANCE OF GROUNDED GRID LINEAR AMPLIFIERS*

JOHN WEATHERLEY,† VK5QL

Trade Review

V.T.V.M., MODEL 300H

The new v.t.v.m. model 300H by Ballantine Laboratories, Boonton, N.J., U.S.A., is capable of measuring voltages as low as 30 microvolts and as high as 300 volts over a frequency band of 10 c.p.s. to 1 Mc.



Impedance matching in grounded grid linear amplifiers seems to be a problem worrying many Amateurs. The following notes are based on articles published over the past few years in British and U.S. magazines. The notes refer to tetrodes and pentodes connected as high- μ triodes as these are probably the types for which this type of information is difficult to obtain.

In a g.g. amplifier there are the same number of impedances to be matched as in a normal grounded cathode amplifier. Impedance matching is probably of greater importance in a g.g. stage because the input and output impedances appear in parallel to the driver stage (see Fig. 1).

It will be seen that any variation of either impedance will affect the other; this can demand high drive. The actual basic circuit with impedances indicated is shown in Fig. 2.

The plate load impedance Z_L is calculated the same as for any power amplifier. The input impedance is a different matter and apart from being complicated, requires tube data not normally available. Fortunately a simple approximation can be made for the input impedance of g.g. tubes connected as high- μ triodes.

First the conductance is calculated—this is the opposite of impedance. If the plate resistance R_p is much greater than the load impedance Z_L , and the μ of the valve remains much greater than unity, the input conductance g_i can be shown as

$$g_i = u + R_p = g_m$$

where g_m is in umhos,
 R_p is in megohms,
 u = amplification factor.

This represents the tube conductance in g.g. As impedance is the reciprocal of conductance the input impedance Z_i may be determined by dividing the g_m into 1 (one). The tube transconductance can be readily obtained from tube tables and if this is in turn divided into 1 (one) will give the input impedance Z_i in ohms.

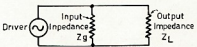


Fig. 1.

For example, the 813 has a transconductance of 3,750 micromhos, the formula becomes $10^6 \div 3750$, which becomes 267 ohms or the impedance to which the driver must be matched to give maximum transfer of power.

It should be remembered that tubes in parallel will behave the same as resistors in parallel and two 813s in parallel would thus have an input impedance of 133.5 ohms.

Table 1 lists some of the tubes found to perform well with both control and

screen grids grounded and in the case of pentodes with separate suppressor with this grounded also. The transconductance was obtained from manufacturers' data sheets and input impedance from the formula $Z_i = 1 \div g_m$, where g_m = transconductance in mhos.

Valve	g_m umhos	Input Z_i ohms
6AG7	11,000	91
6V6	3,750	267
6L6	5,200	192
802	2,250	444
837	3,400	294
6146	7,000	143
4E27	2,800	357
4E27A	2,150	466
4-125A	2,450	408
813	3,750	267
803	4,000	250
4-250A	4,000	250
1625 (807)	6,000	167
EL34	11,000	91
EL38	11,000	91
4X150A	12,000	83

Table 1.

[The above g_m only apply at a specific series of voltages.—Ed.]

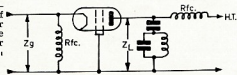


Fig. 2.

The scale is logarithmically expanded and individually calibrated throughout its length of five inches. Accuracy is 2% to 700 kc. and 3% above, at any point on the scale.

Full technical information is available from Warburton Franki offices in Queensland, New South Wales, Victoria, South Australia, and in Western Australia from Tough Instrument Service Co.

"AN AWARD OWED"

Conditions these days, are not very good And QSLs aren't returned, as I think they should.

At times I hear prefixes from all over the place,

And so do others who get in the race. It's very enjoyable to work a rare station And receive a card without much frustration.

But sometimes I find it extremely hard To persuade a station to send me a card. And as for Certificates, I seem to recall That I've won a couple, but they're not on my wall.

Is it procrastination, or writer's gout, That prevents 'em from sending them out?

I'm referring, of course, to the R.D. Award

And their reluctance to send one to Claud.

I have heard just lately of tidings dire, That these awards and records went up in a fire.

It must have been serious, of that I've no doubt,

'Cos it's taken a year to put fire out. In the meantime, of course, the contest continues.

But how can you win? They're all agin youse.

The whole complete set-up has a certain aroma,

Why in heck won't they issue an R.D. diploma

To those willing log checkers who worked night and day?

I "dips me lid", they're not in the fray. But that elusive character, the award designer,

Where in heck is he, on a slow boat from China?

In a recent "A.R." some mention was made

That the necessary blocks didn't quite make the grade.

"Get on it" chaps, their excuses are worn,

Why try to hand us "a very raw prawn".

The contest itself has meaningful aims To remember our comrades, to treasure their names.

In conclusion, may I have this to say, If you can't do the job, you'd best give it away.

—C. P. Singleton, VK4UX.

* Reprinted from S.A. Division, W.I.A., Bulletin.
† 10 Green Street, Elizabeth Park, South Aus.

SPACE COMMUNICATIONS IN AUSTRALIA

Australian Amateurs lead the world in reporting of Oscar 2! Congratulations, chaps.

Oscar 2 is dead, though its memory is still with some of us, but Oscar 2 is known by many more of the VK boys. We watched its progress, measuring its temperature, its speed, its height, placing a protractor along the equator and knowing the inclination to be 72 degrees at the equator, produced the orbital path across our continent with a few figures, and the knowledge that the earth moves from west to east at 15 degrees each hour (at the equator), worked out the number of degrees per hour we move here at Sydney. (For those interested, it is 40 naut. miles per degree.)

Thus after having worked out the number of orbits per 24 hours (60° times 24 hours/90° = 16 per day), we were able to make our own predictions as to when and where Oscar would be at any given time. All States had their own Co-ordinators who were supplied with full data on how to find Oscar, Doppler shift, slant angle, and so on.

We ran a Oscar 2 network on 3.565 Mc., where you could hear what was going on daily. The operators of this net were VK3ABP (Bill), VK7PF (Peter), VK2WH (Hugo) and VK2HO (Roy). We tried the 40 mb band, but it was a wash out. I also tried out 21 Mc. but it was too inconsistent.

At headquarters here in Sydney, phone calls, letters, telegrams and visitors were frequent daily. Much information had to be sent across the continent each day, not to mention the report form service. The W.I.A. N.S.W. Division were busy printing the forms, and also printed a special sheet on how to find Oscar 2, etc., thanks to Tim VK2ZTM and Tony Patterson. In N.S.W. there were small country groups

under selected leaders, and they were the Lismore group, Woolongong, Blue Mountains, Tumut, Kuluara, Gosford, Canberra and s.w.i.s. all over the State. Single operators in country towns did a very good job, not forgetting the many v.h.f. groups in all the capital cities.

VK2ZCF ran a tape on 144 Mc., a recording of Oscar 1, and from this all were able to get some idea what to look for, and what the Doppler shift sounds like, how to count the HI's, etc. This proved very useful. VK2ZJC, at Kurragong, did a sterling job and logged the greatest number of fly-overs in his State, giving times, HI rate, and predictions. Publicity was given to the project via t.v., radio stations, newspapers, magazines, bulletins, etc.

Reports are flowing into Oscar headquarters from all parts of the world. Special honors are due to the Amateurs of Australia, Finland, Austria and England who are providing a great volume of excellent data. Reports from all call areas in W land are excellent. Ed Hilton, W6VWP, states that Oscar 2 reports show a much higher degree of competence and awareness than did the reports received from Oscar 1. Obviously the self-training aspect of Amateur Radio is working well! Many Amateurs are computing Doppler curves, determining satellite slant range, and figuring the period of the satellite and making their own orbital predictions. Congratulations!

To date, 428 stations have reported data to headquarters, with more mail arriving every day. Most reports are of such excellence to enable the Data Reduction Group to directly transcribe them to I.B.M. punch cards for quick sorting and analysis. This operation is now in progress under the direction of Harley Gabrielson, W6HEK. Early analysis indicates satellite temperature remained relatively constant, rising slowly from a lunch figure of 20°C. to

30°C. by revolution No. 293. By revolution No. 294 the package temperature was up to 44°C. and by revolution No. 295 the temperature had soared to 58°C., which is close to the temperature of transistor failure.

Headquarters in America send their congratulations to Amateurs in Australia. Through your efforts the number of reports from VK (based upon Amateur population) are first compared to all countries, and they are excellent in quality. One of the Oscar crew works at I.B.M. and all Oscar 2 data is being placed on punched cards to run through a computer. This will greatly aid the analysis of data. Headquarter staff offer their profound thanks to the VK gang. "It is a pleasure to obtain such co-operation, which stresses once again the International friendship and co-operation that exists within the ranks of Amateur Radio! I am sure that the long-range effects of the Oscar programme will be of great benefit to our hobby."

In conclusion, I wish to thank all who participated in this project. I want to particularly thank all State Co-ordinators, VK1ML, VK3ABP, VK7PF, VK2WH, VK4ZBT, VK5ZX, VK6ZDS, and VK8AU for a very excellent job indeed.

Further, I thank VK2HZ, VK2PF for publicity. Last, but not least, the Council of the W.I.A., N.S.W. Division, for co-operation.

Chaps, don't stop now! Oscar 3 is on the way, and let us be on top again in this next project. Oscar 3 will be a communications satellite not unlike Telstar.

Cheers and 73,

—Roy Hart, VK2HO,
Australian Co-ordinator.

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Price per MATCHED PAIR
£3/12/6

Includes sales tax and one dual crystal socket.

455.000 Kc. Crystals, Type FT-241, £2/0/0 each, includes sales tax and crystal socket.

HC6/U 100 Kc. Marker Crystals, £4/16/0 each, includes sales tax and crystal socket.

FX-1 Type Crystals, 0.001% accuracy: 1,000 Kc., £5/15/6; 3,500 Kc., £4/6/6

FA-5 Type Crystals, 0.01% accuracy: 1,500 Kc., £4/17/6; 7,000 Kc., £5/8/0
14,000 Kc., £6/8/3; 21,000 Kc., £5/8/0

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NATIONAL FIELD DAY CONTEST RESULTS, 1962

Participation in this year's Contest was much the same as last year, judging by the number of logs received. However, activity and scores were greater than last year. The number of logs sent in for Section B unfortunately was very small again, although apparently quite a few stations were active in this section.

A lot of very fine, and obviously very effective, portable and mobile equipment was in operation during the Contest week-end. Everyone seems to be quite happy with the rules as they are at present and with the re-organisation of Civil Defence and, we hope, a revival of W.I.C.E.N. in all States, we hope to get even more participants in the Contest next year.

Here are some details of some of the more elaborate field day set-ups:-

VK3APC—Moorabbin & District Radio Club, with six operators and 10 assistant operators had transmitters operating on 3.5, 7, 14, 21, 50 and 144 Mc.—all with their own receivers and antennae. Power provided by 1.5 kva. alternators. On 21 Mc. they had a quad for their antenna!

VK5LS—Elizabeth Amateur Radio Club had eight operators in the field and worked four stations on 3.5, 7, 14, 21, 50, 144 and 288 Mc.

VK6VT—The V.h.f. Group of W.A. also had eight operators who used all bands except 288 Mc. Four transmitters were used, including a Gelsos GR222 and a Collins 3251.

VK3WI went out to Mt. Blackwood with nine operators and worked the same bands as VK3APC. Equipment used included No. 22 and No. 122 sets and quite a bit of transistorised gear and transistorised power supplies.

VK3CS had also eight operators working 80, 40, 20, 15, 6 and 2 metres. Equipment included a s.s.b. transceiver on the h.f. bands, and among others, and an a.m. rig and a f.m. transceiver on 2 metres.

We regret that lack of space does not permit us to list the wide variety of equipment used by all the other stations operating in the field.

We have again received several reminders about outstanding Certificates and would like to assure all those concerned that they have not been forgotten. Certificates will be issued as soon as possible.

—Federal Contest Committee, W.I.A.

AWARD WINNERS

Section A (Portable Phone):

VK2AAH—H. F. Burfoot	515	pts.
VK3AUL—A. Lock	806	"
VK5BAZ—J. L. C. Bickford	60	"
VK5BQ—B. Cleworth	426	"
VK6JO—R. J. Skevington	224	"
VK7TT—T. J. Tonges	500	"

Section B (Portable C.W.):

VK2JM—J. A. Mead	56	pts.
VK5TL—T. Laidler	50	"
VK7CH—C. Harrison	288	"

Section C (Portable, Multi-Op.):

VK1SB—S. E. Brown	400	pts.
VK2SW—S. R. Ward	582	"
VK3APC—Moorabbin & District Radio Club	1783	"
VK5LZ—Elizabeth Amateur Radio Club	1847	"
VK6VF—V.h.f. Group of W.A.	1125	"

Section D (Fixed Station):

VK2APK—D. Kiesewetter	495	pts.
VK3XB—I. Stafford	565	"
VK4UX—C. P. Singleton	105	"
VK5CV—G. A. Lane	200	"
VK7SM—S. G. Moore	575	"

Section E (Receiving):

WIA-L2633—D. W. Shepherd	335	pts.
WIA-L2699—J. Jobson	425	"
WIA-L2699—J. Jobson	470	"
WIA-L6021—P. Drew	175	"
WIA-L7012—G. F. Sharpe	540	"

INDIVIDUAL SCORES

Section A (Portable Phone):

Sta.	Pts.	Sta.	Pts.
VK2AAH	515	VK4HZ	426
2RX	204	5BQ	233
3AUL	806	5YG	64
3HE	385	5YA	47
3ASW	207	5TL	20
3YA	194	5PE	224
3ZCG	182	6JO	68
3JO	123	6MM	500
3AUC	104	7TT	117
3EM	68	7BT	58
3LW	49	7JB	
4ZAZ	60		

* Check Log.

Section B (Portable C.W.):

Sta.	Pts.	Sta.	Pts.
VK2JM	56	VK7CH	288
5TL	50	7LJ	104
5PE	10		

Section C (Portable, Multi-op.):

Sta.	Pts.	Sta.	Pts.
VK1SB	400	VK3VI	1455
2SW	582	3UJ	743
3APC	1783	5LZ	1847
3CS	1552	6VF	1125

Section D (Fixed Station):

Sta.	Pts.	Sta.	Pts.
VK2APK	495	VK4UX	105
2AHV	315	4ZAZ	75
2ANO	290	5CV	200
2DU	175	5EQ	145
3XB	565	5LL	140
3AST	470	5LD	*
3AXT	425	6AS	*
3AKN	400	7SM	575
3ABP	240	7KH	210
3RJ	220	7BJ	85
3ADU	65		

* Check Log.

Section E (Receiving):

WIA-L2033—D. W. Shepherd	335	pts.
SWL-VK2—R. B. Pinning	225	"
WIA-L3099—J. Jobson	425	"
WIA-L3042—E. Trebilcock	420	"
SWL-VK3—D. Wilke	165	"
SWL-VK5—K. Wehr	470	"
WIA-L5015—W. J. Clayton	395	"
WIA-L5030—T. R. Hutchesson	390	"
SWL-VK5—Miss O. J. Martin	325	"
WIA-L6021—P. Drew	175	"
WIA-L7012—G. F. Sharpe	540	"
SWL-VK7—G. C. Johnson	510	"

JAMBOREE-ON-THE-AIR

Please Note: Correction to August issue "A.R." page 9. The duration of the Fifth Annual Scout Jamboree-on-the-Air is for 48 HOURS, not 24.

In order to avoid the confusion of previous years, the times have been given as Eastern Australian Standard Time, so here they are again. The event will take place between 1000 hrs. E.A.S.T. on Saturday, 20th October, 1962, and 1000 hrs. E.A.S.T. on Monday, 22nd October, 1962.

Plans for the Victorian participation are well under way. Every Victorian Scout Group has received two forms. One is to be returned to me as soon as they have arranged their participation, giving the call sign of the Amateur Station and the bands to be used. This information will provide a list of both local and DX stations. Those who will be using DX bands will be listed and published by the World Scout Bureau throughout the world before the event.

Groups who are unable to contact an Amateur Radio Operator have been asked to let me know so that assistance can be given if possible.

The second form is the log sheet for use during the event, to be completed by the Group in conjunction with the Radio Amateur and returned immediately after the event. This will enable a report to be compiled of the Victorian participation.

The Boy Scouts World Bureau will again be operating its own station from its head office in Ottawa, Canada. This year the call sign is VE3WSB (VE3 World Scout Bureau), using the following frequencies:-

10 mx band—28,490 to 28,510 kc.
15 mx band—21,195 to 21,210 kc.*
20 mx band—14,195 kc. (listening 14,210 kc.)

40 mx band—7,250 kc.

* On these bands, VE3WSB will give preference to stations outside Canada and U.S.A. at all times.

Amateurs requiring further information or who have any suggestions which might help, are asked to contact Lin VK3ARL or myself (VK3AGD) any Tuesday or Thursday evening on 80 metres after 2030 hours E.A.S.T.

—John S. B. Y. Woodburn,
Branch Organizer, Boy Scouts Ass.

SCANDINAVIAN CONTEST 1962

The Scandinavian Activity Contest, 1962, will be held on the 3.5, 7, 14, 21, and 28 Mc. bands. C.w.: 1500 GMT, Saturday, 15th Sept. to 1800 GMT on Sunday, 16th Sept. Phone: 1500 GMT, Saturday, 22nd Sept. to 1800 GMT on Sunday, 23rd Sept.

Non-Scandinavian stations call "CQ SAC" on c.w. and "CQ Scandinavia" by phone. The Scandinavians will use "CQ-Tect" and "CQ-Contest".

Logs are to be mailed not later than 15th October, 1962, to the Traffic Department of E.D.R., P.O. Box 335, Aalborg, Denmark.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

FILTERS

Editor "A.R." Dear Sir,

In his article on "The Importance of Adjacent Channel Selectivity" (August "A.R." p. 8) Mr. E. C. Hulme, VK2EN, inferred, possibly unintentionally, that crystal filters are inferior to mechanical filters. I would like to make the following points.

1. It is just as impractical for the average Amateur to construct a mechanical filter as it is for him to construct a modern crystal filter. No Amateur, to my knowledge, has attempted to manufacture a mechanical unit and the reasons for this are illustrated by VK2EN's comments on the "work" of such devices. Those crystal units described in constructional articles cannot be considered as representative of modern filter units as they invariably use obsolete types of crystals. A modern crystal filter uses hermetically sealed, plated crystals carefully manufactured for frequency, inductance and lack of spurious responses. The average Amateur just has not the facilities available to make such crystals and thus he must purchase a "black box" to get a first class unit.

2. If the filter is considered as a "black box" supplied by a manufacturer then neither the mechanical nor crystal type of unit is particularly difficult to install provided the directions are followed.

3. Shape factors obtainable with mechanical filters are also possible with crystal filters, e.g. a six-crystal filter can be built with a shape factor of 2:1.

4. The insertion loss of a crystal filter is usually considerably less than that of a comparable mechanical unit, e.g. 5 db. as compared to 20 db. Figures on in-band ripple are of the same order, viz. 1 db.

5. Crystal filters can be made for frequencies between 30 kc. and 40 Mc., whilst, at the moment, mechanical filters are limited to frequencies below 600 kc. This means that in receivers employing only one I.F. and a mechanical filter, the I.F. is, of necessity, low and image responses are still a problem. However, if the one I.F. is of the order of 5 Mc. and a crystal filter is used, then good selectivity is obtained where it is most needed and images are no longer a problem.

6. In all fairness, however, I would point out that within the range 400-500 kc. the mechanical filter is smaller and usually more economical than the crystal type.

Summing up, it seems the mechanical filter is the better proposition for the Amateur I.F. s.s.b. exciter, but there is no doubt that the h.f. crystal filter is the device for the modern communications receiver whether it be for c.w., s.s.b. or a.m. work.

—David Rankin, VK3QV.



"A.R.'s" DX Editor, Al. VK4SS.

Rig. 80 through 10 mx, 70 watts. Rx AR80 and home brew. DXCC on 7, 14, 21 Mc. Forty Awards and Contests. Many times VK/001. C.H.C., A.H.C., Q.C.W. etc. Countries worked, 230 plus.

SPLATTER

Editor "A.R." Dear Sir,

I would be the last to brand VK3PU's criticism of my article on "Splatter, Its Cause and Prevention" ("A.R.", July '68) as hysterical.

No claim was made by me for originality in application of a shunt diode to provide a conductive path for excessive negative swing of modulation potentials; even the generation of ringing frequencies dependent on the distributed constants of open circuit inductors is a well known factor. However, the realisation that this phenomenon is the basic cause of monkey chatter heard during excessive modulation, and NOT audio frequency harmonics of the fundamental speech signals seems to have escaped attention.

The "Amateur Bible" (A.R.R.L. Handbook, p. 235, 1962 edition) persists in the erroneous explanation that splatter is due to audio frequency harmonics generated by clipping of the modulation envelope, consequently confusion among its devotees is explicable.

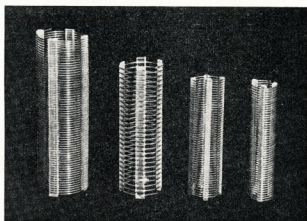
Permanent "Negative Cycle Loading" as advocated by Reinartz ("A.R.", March '62) is a decidedly amateurish and brute force method, wasteful of audio power, and a chronic source of audio frequency distortion at all levels.

Low pass filters in the modulated amplifier h.t. supply undoubtedly assist in reduction of modulation by lower order audio harmonics of speech frequencies, and should be used in addition to any form of Negative Cycle Loading or Clipping. At the radio frequencies generated by ringing of open-circuited modulation inductors the usually jumble wound filter coils no longer operate as essential inductances but by-pass increasing levels of splatter producing energies.

In conclusion, I would like to stress that my article was intended to place before the Amateur fraternity a simple method of serious splatter cure, not requiring specially wound and insulated diode heater transformers. Also to VK3AZG I would like to publicly express my appreciation for his assistance in making available the 6R3/6AL3 diodes.

—J. G. Reed, VK2JR.

AIR-WOUND INDUCTANCES



No.	Diam.	Turns per Inch	Length	B. & W. Equiv.	Price
1-08	1/8"	8	3"	No. 3002	5/3
1-16	1/16"	16	3"	No. 3003	5/3
2-08	1/8"	8	3"	No. 3006	6/3
2-16	1/16"	16	3"	No. 3007	6/3
3-08	3/8"	8	3"	No. 3010	7/4
3-16	3/16"	16	3"	No. 3011	7/4
4-08	1"	8	3"	No. 3014	8/5
4-16	1"	16	3"	No. 3015	8/5
5-08	1 1/4"	8	3"	No. 3018	10/6
5-16	1 1/4"	16	3"	No. 3019	10/6
8-10	2"	10	4"	No. 3907	13/9

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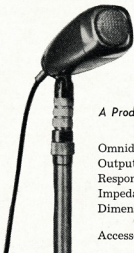
References: A.R.R.L. Handbook, 1961; "QST" March 1959; "Amateur Radio," December 1959

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H F

NEW SOUTH WALES

At the V.H.F. Group committee meeting on 30/7/62 two members of the Group were co-opted to help out as Reg Z2CK had resigned and also another committee member indicated that he may be leaving the State, although this was not finalised. The committee wishes to thank John Z2AW and Terry Z2BL for coming forward.

The Group meeting was held on 3/8/62 where the lecture was given by Barry Z2AH on a 576 Mc. atal locked converter. The Group meeting for Sept. will be held on the 7th, as usual on the first Friday of each month.

The day event for Sept. will be a long distance fox hunt, held on Sunday, the 9th.

I would like to be able to include v.h.f. news from areas other than Sydney as I understand v.h.f. activity is relatively high in other areas, such as S. Zone, but unfortunately very little news filters through regularly. If anyone has any news they think would be suitable for inclusion would they please contact me on 14.18 Mc. or write to 17 McIlvenie St., Canley Heights, N.S.W.

144 Mc.: Conditions have been reasonably good seeing it is the middle of winter and the New South Wales are hearing stations regularly. Unfortunately the converse does not apply, which is probably due to higher noise level and not listening in the right spot at the right time.

Concurrently with the sporadic E opening on 50 Mc. many stations are listening for break through on 144 Mc. On 14/7/62 John reported hearing JARI (?) calling CQ at 121 E.S.T. At 121 E.S.T. Z2PO (?) was heard and Z2AO heard between 1220 and 1224. It has not been verified if these stations were active on 2 m. at this stage as the last letter of the VK3 and VK5 calls was not clear. Horrie the suggest that the stations were heard on a retransmission from 50 Mc., but this angle could not be confirmed.

New stations heard this month include Z2XB at Balgowlah, Z2BC at Terry Hills, and Z2OK from Sans Souci, who was last heard on 2 m. nine years ago but has made the plunge again.

Alec Z2AAK at Kilmura and David Z2VW at St. Ives have been using a.s.b. with vox control for their QSOs. Tony Z2BU of Waitahara has been discovering the joys of a tal locked converter.

Mc. Openings occurred regularly each Sunday during the early part of July. One of the best openings occurred on 15th when State and Sept. VKs and VKs were audible at various times during the day.

576 Mc.: No activity at the moment, but Z2AH/P and Z2HO have claimed a State record of 62.5 miles from St. Ives to Mt. Gibraltar. Z3, Z2LB.

VICTORIA

VK3 Friendly Frequency.—If you have ever tuned up to 145.850 Mc. you might have heard some peculiar sounds. Probably you have tuned in a station operating in the f.m. net. The set operates equipment that was available some twelve months ago through the Victorian Division's disposals department. The mobile set has been using a.s.b. with vox control. rx's are double converted, and both are crystal controlled. The tx has a total of 10 tubes, the rx has been using 2A5, 6X4, 6BE6, and 6X4. The net was open on 15th and 17th and 18th the band was open to VK3 and 5. On 20th, to VK3; 22nd to VK5 and VK3, and on 16th to VK5.

Maybe it was just coincidence about the H bomb, but if we could have the opportunity to study further similar experiments it may be of value in understanding the modes of propagation at v.h.f. better.

Amateur Radio, September, 1962

New station on 6 m. is Ken Z4KP, who is running ftw. into a folded dipole nailed to the wall. Rx is a 658 converter into a com. rx. Other news items possessed by Ken and his XYL is a brand new baby daughter.

Reverend Doug Z4DL now visits Brisbane every Tuesday and it is a very great pleasure to hear his voice again after a long absence. Previous to this only the Gold Coast had the benefit of Doug's presence on 6 m. George Z4GD is now in the wilds of Tully in North Qld. He points out that not only is there a great lack of enthusiastic and progressive Amateurs, but there are very few full licenses also.

Newcomer to this part of Brisbane is Bruce Z4BZ and his family. Bruce has returned from the Toowoomba area at last. V.H.F. activity in this suburb, Mt. Gravatt, seems to be mysteriously growing. There are Amateurs, Amateurs moving in. Amateurs who are going to move in, and budding Amateurs. With such a concentrated area of t.v. we may eventually create a t.v. set-free zone or something.

The V.H.F. Group meeting was held on the third Friday of the month at the Social Services Institute Hall at Berwick Street, Valley. This is now the new time and place. The meeting was well attended, was organised, was noisy, in fact even some business was attended to. Z3, Z2BT.



A guard of honour was formed at the recent wedding of Christine and John Z2Z (ex-ZCJ). STN and 5BQ are holding the 2 m. yagis to form the arch. A very high percentage of the guests were v.h.f. Group members and notable among them were VK3 Z5Z, 5KX, 5TN, 5ZDR, 5ZCQ, 5ZDQ, 5ZAH, 5ZBL, 5BQ and 5ND. Radio contact on 6 m. was maintained with the newly weds on the first leg of their honeymoon. (5BQ mobile to the bridegroom's car.)

WESTERN AUSTRALIA

July Meeting: 30 members and visitors attended. Four new members were welcomed to the Group. These were Michael Z6CX, Ian Z6CL, Trevor Z6DZ, and Graham Blyss who has sat for the L.A.O.C.P. Cores Island Ben: Work is still continuing on the gear and antenna for the installation of this beacon. Further progress will be reported next month.

V.H.F. Field Day Award: Entries received for this award following the field day were of a very high standard. It was found impossible after due consideration to separate the entries of John Z6AG, Vic 6VK and Dennis Z6AW. The prize was divided and presented to these stations.

Western Video Transmission Club, VK6WV/T. This club has been transmitting regularly on 2880. Four new members have been achieved in reception using a converter into a standard t.v. set on Channel 3. Numerous reports have been received on picture quality and many local Amateurs are building transmitters. Transmission times are: Week days, 1100-1400 hrs., 1500-2200 hrs.; week-ends, 1500-1700 hrs., 1900-2200 hrs. Test patterns and caption boards have been the main subjects, but technical transmissions are aimed at soon.

V.H.F. Group Annual Meeting: The minutes of the previous annual general meeting were read. Wally Z6AA read his report as the retir-

ing President. He reported on the achievements and successes of the Group during the preceding year. He thanked the Secretary and members of Council for their support, and also thanked all members of the Group for their support in running the Group and participation in the Group's activities and contents.

The election of officers followed. Those were: Patron, Mr. Graham; President, Wally Z6AA; Sec.-Treas., Rod Z6DZ; Council: Don Z6HK, Dennis Z6AW, Kevin Z6CB; Trustees: Ron Z6FM, Syd Z6J; Auditors: Mr. Dooley, John Z6AG; Press Correspondent, Allyn Z6DM; Programme Directors: Max Z6MM, Dennis Z6AW; Contest Organiser, Lance Z6LR; Keeper of the Records, Charlie Z6LK; Librarian, Rolo Z6BO; QSL Manager, Lance Z6LR.

An award was founded for the most outstanding achievement in the field of v.h.f. Amateur Radio by a member of the V.H.F. Group. This award will be accompanied by a remuneration of £5/5/0 as an incentive for amateurs to further the achievement and technical ability of Amateur Radio in general.

50 Mc.: The first major v.h.f. opening during winter was experienced here on 15th July. VK3 4 and 5 had a good hour and worked. The band was open from 0800 hrs. to approx. 1400 hrs. W.A.S.T. Conditions were so good that both 6ZDZ and 6ZDL reported hearing ZAXI mobile, but were unable to make contact with him. Except for the activity this break through caused, 50 Mc. has been fairly quiet. Ian Z6COP has been heard and worked on the double sideband. Peter Z6BZK has a tx working and is now working on a converter and beam.

144 Mc.: Bob Z6DZ has just completed a converter for this band and both he and Brian Z6DZE are building 10 el. yagis. Viv Z6CM is hoping to be on the band soon. As usual cross band operation to 50 Mc. is the major activity on this band.

288 Mc.: Major activity is building of converters to receive the Amateur t.v. transmissions by 6WV/T.

It has been seen in the past that winter time is building time, so it is this year. A number of mobile stations have appeared on 30 Mc. this month, talk of 144 Mc. mobile has been heard in a few quarters. Please remember the scribe needs reports of these and other activities to give an accurate account of v.h.f. in VK3 for photos, so pass on any news you have. Z3, Z2DM.

PAPUA

What confusion regarding frequencies available for use! We were amongst those caught and were not aware until the last few days of July that 50-52 Mc. was in fact still available for use. The V.H.F. Group opportunity was taken for modification of existing equipment by both Z6ZV and 9AU and both have been active during the month. At the time of writing, Z6ZV still has to replace his converter tal socket and 9AU has to carry out a lot of wiring on a new converter for 50 Mc. Murray Z6CK had not made any alterations and is active again on 6 m. but has not heard anything other than some 48 Mc. from the 7000-8000 area, or tried up much.

No activity at all during the month on 144 Mc. Z3, 9AU.

W.I.A., VICTORIAN DIVISION

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S.S.L.

OHO, KL7, ZD8, ON4, LZ, FF8, VP8, XW8, 5H3, WO

Sub Editor: ROBERT YOUNG, WIA-L3076,
14 Alverna Grove, Brighton, Victoria
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

Here we are once again with information on activities of the s.w.l.s in Australia. Firstly, I must apologise for the absence of news in the August issue of "A.R." The reason was that only two letters were received by me for the notes. As you can understand it is impossible to write a page of notes out of practically nothing. I wish to thank the few regular members for their support every month. So chaps, how about helping to support this page by writing of your activities or equipment, etc?

VICTORIA

At the last general meeting of the group, 19 members were in attendance. The meeting moved very smoothly, but nothing happened of great interest. After the closing of the general meeting we were all shown how VK-3WI operates on 6 and 2 m. We contacted a large number of Amateurs while on the air.

At the construction night on 14th Sept. Ian 3A068 worked a parts list and circuit for those who intend building a 50 Mc. converter. It will be a three-tube unit with an L/C osc. and will feed into a tunable i.f. in the v.w. range. It will require a power source of 6.3v. and 100 to 250v. h.t. The finished article will also be at the meeting. Those who intend to construct this should bring along a list of all the glass-base valves they have, pentodes, twin triodes and triodes being most useful. We will advise you.

As a large group turned up at the visit to VK3APC it has been decided to continue the visits to places of interest for the rest of the year. The next visit on 7th Sept. will be to GTV9 Studio at 22 Bendigo St., Richmond. The time at the studio is 8.45 p.m., or for those requiring transport, meet at Victoria Parade at 1.15 p.m. Visits for October and November will be announced when finished.

In a note from Ian L3006, he requests information for the compiling of a list of frequency-useful stations in Victoria. The list, under the heading of "BUSH FIRE NETWORKS, SCHOOL BROADCASTS, FOREST COMMISSION, SHIP-TO-SHORE, FISHING BOATS, LIGHTHOUSES, CITIZEN FREQUENCIES, MODEL AIRCRAFT, PRESSURE BOATS, AIRCRAFT CONTROL, AIRCRAFT-TO-GROUND, and other frequency users operating in the range from 1.6 Mc. to 30 Mc. Details required are the exact frequency, type of operation, location, call signs, type of service, and other details which would assist in reception of the signal. This information can be forwarded to him direct, the address is given in any Call Book, or to me.

Those who assist will be forwarded a free copy when it is completed. We do not want broadcasting stations and there is enough information on these signals.

Yours truly has been listening very much on the DX bands due to being bitten by the v.h.f. bug, and has been listening on 2 m. To date have only received DX contacts at Ballarat, being VK3ZER/M at Mt. Buninyong, received here with a 5 by 5 signal. He was using a four element beam three feet above the car and was running 9 watts to a 312. He worked about a dozen Melbourne stations without any trouble.

SOUTH AUSTRALIA

It seems that the S.W.I. Group in Mount Gambier is fast turning into a V.H.F. Group. It is hoped by the end of the year that there will be three more Limited licensees in Mount Gambier, due to three members sitting for a Z call license examination. The candidates were John Lehmann, Trevor and Colin. All that is to be done now is to await the results.

Listening at Collin's QTH has been mainly on 6 m. and a little on 2 m. On Sunday, 15th July, there was an extremely good opening on 6 m. to VK4, VK2 and VK3, total of 25 direct stations were logged during the opening. The converter used was a r.f. unit type 28 which is on loan until a xtal locked converter is completed. The antenna was then 6 m. is only a temporary three element yagi about 18 to 20 feet high. All stations heard during the opening were all running 5 x 4 m. Gary VK3GZ spent his first day on 6 m. on 15th July and worked seven VK4s and two VK2s and Dale VK3ZER; LZ3GG was heard but not contacted. Gary was then running 6w. and later on the power was increased to 15w. input to a pair of p.p. 807s. The antenna used is a four element yagi about

40 ft. high. Gary's operating frequency is approx. 50.95 Mc.

Dale VK3ZER is running roughly 15w. input to a 832A, but at the moment is having trouble with his converter, but did manage to hear a few stations during the opening. The 6 m. band came good from 1000 hours till 1800 hours and there were still stations audible when it came time to pull the big switch at 1800 hours.

Colin's three tube converter for 6 m. is progressing very well and should be in operation very soon. The converter consists of a 12AT7 osc., 6U8 mixer, and a 6ES8 i.f. amp. which will feed into the Edgystone 640 at 7 Mc.

RADIO MAIL

I wish to thank the following for their letters: Eric Treblecock, Chas. Abernethy, Peter Drew and Ian Thomas.

QSLs received by Eric L302 so far include HC4IE, OX3UD, TG3AL, UB8ES, UDGKAB, UH3KAA, VEZKE (3.5 Mc.), VK9ER, W9WNV (3.5 Mc.), ZC4AF and ZL3BAH. It may interest you to know chaps that Eric has mailed out 866 reports this year which is not bad going.

Chas. L2211 reports that s.w.l'ing has been out for a while, although he did log Oscar 2 on 145 Mc. on six occasions, and has sent logs away to California and hopes to receive confirmation in due course. Chas. has had his son home from VK3 so the Ham station has been working hence no s.w.l'ing.

Peter L621 has recently acquired a new rx, which is mainly being used for overseas broadcasting stations. It covers 550 kc. to 9.5 Mc. in four bands and then has amateur bandspread coverage on the 31, 25, 19, 16, 13 and 11 m. broadcast bands. This of course is very good for the use stated above with good results, however it also covers 180, 80, 40 and 15 m. Amateur bands which is a great advantage, especially 15 m. which Peter has not been able to receive before. This band comes

in on the 13 m. band coverage. The rx is a nine-tube superhet. put out by Pye.

Band conditions in VK8 have been poor but 15 m. has been fairly good for W, JA, VS, ZS, ZE and CBT in the afternoons. 20 m. has been fair for VE and W in the afternoon while 40 m. is good for Ws on c.w. in the morning and good in the late afternoon and early evening for Ws on s.a.b., also JA and even DX, KXs, KJ3, VR1G and one rare one —XKICV (7 Mc. s.a.b.). On 80 m. ZLs have been in the mood, hence the locals have been fading in and out on 40 and 80 m.

Ian L3053 is still finding time to listen in and has sent out 123 QSLs since March and has received so far 14 in return. The latest were VK3UJ/LH, CN2BK, KL7R and ZL3OX for 169 m. c.w. report. Ian has not logged too many countries or DX stations in the past month due to being busy at his studies, however he managed to get the 6 m. converter in action again after blowing all the dust out of it and logged a few weak locals on the band. It seems a 5 m. qsd will have to be erected and also 5 m. qsd to work on the 6 m. tx again, during the meantime it is hoped to see a rise in the DX total during the next month.

So 73, and best of DX, Robert L3078.

DX LADDER FOR SEPTEMBER

	Countries	Zns.	S.s.b.	W
Conf.	Hrd.	Conf.	Conf.	Hrd.
E. Treblecock	277	282	40	50
D. Graham	161	149	14	90
A. Wescott	84	159	31	92
M. Hilliard	69	210	33	105
M. D'Amico	215	26	12	128
C. Abernethy	42	82	26	—
N. Harrison	34	61	24	—
P. Drew	33	180	19	93
P. Fielding	133	—	—	—
I. Thomas	19	134	17	88
D. Jenkins	10	141	7	—
H. Burger	6	195	5	19

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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

NEW CALL SIGNS (MAY)

VK— Australian Capital Territory
1VF—St. Columba's Fellowship Association,
Fawkner St., Braddon.

New South Wales

2BM—J. Birdsall, 23 Calbina Rd., Northbridge.
2DG—D. R. Shaw, O.T.C., Bringley.
2YD—C. Jackson, 22 Innes Rd., Manly Vale.
2AVY—W. K. Rogers, 185 New Ballina Cutting,
Lismore.
2ZDF—P. L. Bochtmann, 26 Coane St., Mere-
weether.

Victoria

3ZAP—A. J. F. Paterson, Lot 27, Victor Cres.,
Forest Hill.

Queensland

4DT—A. T. G. Hanson, Station: Chester St.,
Thursday Island; Postal: G/o, O.T.C.
Radio Station, Box 3, P.O., Thursday
Island.

4IR—Wireless Institute of Australia (Qld. Div.),
Central Qld. Branch, Station: Official
Residence, National Broadcasting Station
4RK, Cremorne, Postal: P. M.
Nolan, National Broadcasting Station,
4RK, Cremorne.

4JJ—Mrs. M. J. McGrath, Elliott St., Elliott
Island.
4ZR—K. J. Dibble, 84 Imperial Ave., Morning-
side, Brisbane.

4ZAS—F. A. D. Smith, 373 Bilsen Rd., Geebung.

South Australia

5RG—R. S. G. Hanson, Station: Richmond Ave., Colonel
Light Gardens.
5ZGT—J. R. Tilbrook, 10 Corunna Ave., Colonel
Light Gardens.

5ZJH—J. Hackworth, 34 Oaklands Rd.,
Somerton Park.
5ZLV—H. A. White, Willalooka, Postal: C/o
Masons, Private Mail Bag 25,
Willalooka.

5ZMT—T. J. Moll, Fenden Rd., Salisbury.

Western Australia

6RL—R. E. Leigh, 33 French St., Joondanna
Heights.
6ZDY—K. L. Robinson, 8 Goldsmith Rd., Clare-
mont.

Tasmania

7RF—D. E. Briggs, 22 Cotteloe St., Linds-
farne.

Territory of Papua and New Guinea

9JM—J. P. Meehan, P.O. Box 52, Port Moresby,
Papua.

9AT—E. J. Roberts, Station: Lot 31, Section
41, New Borka, Port Moresby; Postal:
P.O. Box 816, Port Moresby.

FEDERAL QSL BUREAU

Denis Andrews, G3MXJ, radio officer on the
Orion, who proposed to change to a land-based
job, has now decided to continue on the Orion
for a further period.

The new address for the Radio Club of Chile is
P.O. Box 15360, Santiago, Chile. The QSL
Manager is GURV.

Radio Amateurs throughout the world are
invited to take part in the first R.S.G.B. 7
Mc. DX Contest to be held on October 27/28
and November 3/4, 1962. Contest hours are
0600z to 2400z in each case, the first period
being for phone and the latter period for c.w.
Full details of the contest will appear in a
later issue of "A.R."

Due to difficulties associated with the clearance
of Box 2611W, G.P.O., Melbourne, since the
retirement from employment of the Federal
QSL Manager, it has been decided to open a
new address for the Federal QSL Bureau. This
address should be used forthwith for all QSL
Bureau business only.

The new address is:—

W.I.A. FEDERAL QSL BUREAU,
P.O. BOX 41, BOX HILL, E.11,
VICTORIA, AUSTRALIA.

Divisional QSL Managers should now destroy
all adhesive labels bearing the old address.
New labels will be printed and distributed in
due course.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

GENERAL MEETING

The July meeting, which was held in the
Wireless Institute Centre at Crows Nest, was
the largest roll up of people seen for quite a
considerable time. The lecturer for the evening
was Keith Jeffcoat, VK2BK, and his lec-
ture was on receivers for s.b.b. His demon-
stration of rx's using tail lattice filters, etc.,
was exceedingly shown, and a 144 Mc. s.b.b. tx
at the back of the hall enabled everybody to
hear the effect of changing the bandwidth of
the i.f. strip.

After the lecture was finished, a discussion
about our property at Dural, where the Divi-
sional Station VK2WJ is situated, took place.
Many people spoke both for the retention of
the property and against the retention of it,
and the final outcome was that there was to
be a series of tests carried out by the Com-
munications Committee in order to see if the
Wireless Institute Centre was as good a site
for propagation as the present site at Dural.

At the outcome of the meeting, the President,
Vol Moresworth, VK2VO, tendered his resigna-
tion, and handed the chair over to the Vice-
President, Max Pfeiffer, VK2MP.

GENERAL NOTES

Tim 2ZTM, owing to the pressure of work,
etc., has been forced to seek leave of absence
from Council for three months and to resign
from the position of Communications Officer.
He has, however, remained as chairman of
W.I.N.A.P. (Wireless Institute News and In-
formation) and his place as Communications
Officer has been filled by Sid 2SG.

The Public Relations Committee is going
about the wildlife in the renovation of the
front portion of the Centre. Plans are in hand
to have the walls plastered, patched and
painted by the time our Spring Ball comes off
in late Sept. This place is a really nice
show, and we hope to see a good roll up.

W.I.N.A.P. is going ahead like a house on
fire and so far have produced a Handbook of
Hints and Tips, circuits of 144 Mc. transistored
transceiver, transistorised converters, valve
converters for 144 Mc. and similar things.
These are available to all members of the
Institute for the price of a s.a.s.e. and an enquiry
to W.I.N.A.P.—Tony, LZ219.

HUNTER BRANCH

The July meeting was held, as usual, in the
University College and there was a good at-
tendance of 32, including four visitors. Sid
2SG was on hand to give his most informative
illustrated lecture on transistor converters for
the Amateur bands. The lecture was very
well received if the questions asked at the
end are any indication. Sid dispelled from
the mind of the oft-told bogeys of transistors
and even our worst "President" was con-
vinced that they should, as he said, "be in
every home." To be able to see the actual
gear described in the lecture and to personally
talk about problems with the lecturer is a
great encouragement and I am now confident
that my own converter, so long dormant be-
cause of self oscillation, will be in action for
Blacklake.

I'm 2AJF has abandoned all thoughts of
building his own tx and is now the owner
of an ATC which up to the time of writing
"succeeds only in making the screen at his
home a complete blank when switched on."
We welcome back to the fold the local nat-
urer Jack 2GO. By the time these notes
appear, Jack will be away "in the warm
country," to use his own words, where he will
stay for six weeks. Chalk pushers are the
traditional local vacation characters. My note
about Harry 2AFA being persuaded to go on
the air apparently worked, for, hardly was

SILENT KEY

It is with deep regret that we

record the passing of:—

VK300—Eric Wardle.

the ink dry than he was heard calling Bill
ZZL. If this is the power of the press, then
surely the pen is mightier than the sword.
Harry is even making mild mutterings about
two metres.

It is reported that Stuart, our worthy Presi-
dent, is about to join the rank of our duck-
talking colleagues and will be active on all
bands before long. This is in addition to his
two metre activity where all is reported to be
going very well. Another 144 man, Tony 2ZCT,
was tempted to leave the 2 metre band, but the
cackles with a circuit which appeared in a
U.S. magazine. He is, however, unable to find
any information on a tube type 6AR4 which is
used in colour t.v. in the land of April
Weather. Anybody with gen on this tube,
see Tony.

John 2GNF has had the phone to the shack
disconnected because he is tired of hearing
the much repeated phrase, "Are you on the
air?" Norm has a wonderful beam which does
quite remarkable things even though it bears
no resemblance to the drawings in the text-
books. Stan 2AYL has been heard at my QTH
on two and a half metres. More of this and
some trouble putting bits of piston back in
place in the Jaguar. It is quite likely that
yours truly may be on 2 soon because of a
generous offer by Mac 2ZMO. More of this
later. 2QB is soon to be heard on the band.
Fred 2AEE is reported to be still active al-
though he has not heard him. Ron 2A8J has
recently, thanks to the help of the boys, gone
on 2 m. It is good to know that Ron is well
enough to be very frequently on the air of
it, a rival to the 2 m. Bob 2AQR is prepar-
ing a surprise for us all at the field day;
is this true?

As always among the associates is growing
rapidly and several of our members are known
to be contemplating an early try at the big
quiz. Belmont Bob had to steer some local
quartz on the right to come to the shores of
the use of the v.f. portion of the 18 set. Bill
Munn is looking for crystals for 2 m x so it
will be if he has this band while
getting ready for the Morse.

Elsewhere in this issue there is the adver-
tisement for the Dinner and Field Day. Study
this and the Bulletin carefully and come along
for a good day at the shores of the lake.
Yes, I'll be there and you will be able
to personally challenge me for wrongful re-
porting if it ever could be true.

Also, you are reminded of the next meeting
which is to be held at the usual venue, Uni-
versity College, Tighes Hill, on Friday, 14th
Sept. at 8 p.m. accompanied as far as I know
at this time is Keith 2BK's s.b.b. rx, which
was postponed from an earlier meeting. Bill
2XT will be holding his usual social gathering
on the 14th at the Hotel 2AQR. The dinner
is only three days later than the
usual fourth Wednesday, but come along to
the monthly meeting and ask for details of
the going on. The 2 m. band and Blacklake
we'll all be there. 73, 2AEX.

BOORAGUI HIGH SCHOOL RADIO CLUB

A small party recently travelled to Dural
to visit 2WL. Those fortunate in the selection
were Susan, Ray and Allen who, with past
President Bruce, accompanied Keith 2AEX on
the journey. A very good day was had by all
and the duty operator and engineer were most
helpful in their explanation of the gear. To
make the day complete Harold 2AGJ arranged
for some gear donated by 2TL to be passed
on to the club. Our sincere thanks to these
amateurs for their generous donation of
equipment to our club. We do appreciate gifts
of components and units and you may be sure
that these are being put to good use.

At least three members are trying out for
the Technician's Certificate with the
P.M.G. We already have two past members
with this Department and we wish the new
applicants success. An examination sched-
ule is ready for the Elementary Certificate
exam, and several members are completing the
projects for the Junior Certificate. 73, 2ATZ.

VICTORIA

A Special Council Meeting was held on 18th
July to formulate a proposal to increase interest
in Amateur Radio in general and the Institute

In particular. The considered opinion was that it was necessary to place a definite suggestion before the Association.

As Council saw the problem, there is something lacking in the Institute, the question being what? From questions asked, the most common complaint seemed to be lack of opportunity for the chaps to gather informally and meet the other bloke in a social atmosphere.

This is the kind of thing that the monthly meetings did not meet this need. Possibly members felt that travelling to the club was a difficulty, finding parking space made the effort too much.

If this were the case monthly meetings as such must be a waste of time and may as well be dispensed with.

Reviewing all aspects, Council formulated a plan for the formation of suburban radio clubs.

AUGUST GENERAL MEETING

Despite widely publicised appeals only a little over 40 members attended the August meeting. Formal business was quickly disposed of to allow plenty of time for the agenda item for the evening.

This was to be a critical discussion of some aspect of the Institute. The Chairman asked Michael Owen to open the discussion. He explained that the basic reason for Council making the decision to discontinue the attendance at monthly meetings. Average attendance is between 25 and 30 from a membership of about 500. Council considered that the Institute was not doing well on a relative level, but that the social side of things could be improved, and with this object in mind suggested the formation of suburban clubs operating throughout the metropolitan area, catering for the needs of members within a relatively small district. This suggested that in order to qualify as an affiliated club, the club would require a minimum licensed membership of, say, 15, of which two-thirds should be members of the Institute. A member of the Institute could be a member of as many local clubs as he desired (or could afford), but for the purpose of affiliation would have to nominate only one club.

Clubs could be supported by a per capita payment in respect of each Institute member of the club, similar to present per capita payments. The amount of each club's contribution would have to be approved by Council, but the conduct of its own affairs would be a matter for the club.

To enable clubs to have representation on Council the metropolitan area would be divided into three districts, each of which would jointly elect a member of Council. Seven councillors would then be elected as at present, by the membership as a whole.

A further suggestion was that a committee of representatives from each affiliated club be formed to co-ordinate the activities of the clubs and to make recommendations to Council.

If this proposal was adopted, it was suggested there was little point of continuing the formal general meetings. Possibly city club could be formed to cater for those members who preferred to attend meetings in the city.

The administrative functions could be left entirely to the club. It was suggested that the Council would be subject to the Annual General Meeting, and to Special General Meetings. It was suggested that the rules of the Convention should be changed so that the Council became subject to a decision of the Institute Council. The suggestion was supported by delegates from country zones and affiliated clubs.

It was stressed that the whole object of the plan was to encourage members of the Institute by linking the clubs as closely as possible with the Institute, by representation on Council, by participation in the Convention and by some financial contribution from the Institute to the clubs, although leaving it to the clubs to conduct their own affairs.

The motion was then opened for discussion, and many of those present spoke out. Most opposed the abolition of general meetings. Some felt that the abolition of those present were regular attenders of general meetings anyway. Alf JLC, speaking on behalf of the Metropolitan District Radio Club, thought the club was in general a good idea, although on some points he felt his club was anxious to retain its independence.

The motion was then opened for a vote. As Len JSL said, had operated very successfully. The motion was supported, they strongly opposed any change, as they felt that the formation of suburban clubs, with lower membership subscription, would attract members. The Institute would be weakening the Institute. However, no precise alternative proposals were formulated.

A motion was then made to make to improve general meetings, including the use

of lapel badges to identify those present; the appointment of hosts to introduce new members; and general conducting the meetings in a less formal manner.

All members are urged to consider these proposals and to make their views known to the Council.

The following new members were admitted to the Institute: Bernard Coles, VK3RS; David Smith, VK3ZK; Mike Smith, VK3AY; John Winton, VK3XR; Angus Harding, VK3ZK; Ralph Birrell, VK3ZNE; Robert Terrill, VK3ZFT, as full members, and the following as associate members: John Hall, Douglas McKenzie and Arnold Marks.

Having devoted so much space to the matter of the VK3ZK, the Council can only apologise out my throat to fill the mag. with personal notes this month, so I'll close by observing that a certain number of vehicles following after checking a certain budget in a waste on anybody who never drives over 25 m.p.h.

EASTERN ZONE

Jack 3AJK, of Moe, hopes to be on the h.f. bands again by the time you read this, after five years absence. He is busily getting together his equipment, including a 100watt 2x and a tower. Cliff 3AIT has been working some 40 mX evening DX, including KX6, VR2, and this band is getting better. Bob 3JL, residing in Bairnsdale, may get on 144 Mc. In the near future, Alan 3AON has been operating portable on 144 Mc. from Mt. Tassie, working on 144 Mc.

About a week after the Pacific high altitude atomic test, Peter 3ZDP and George 3ZCG experienced a high altitude test on 50 Mc. Also two weeks later, David 3DY had an excellent QSO with JA40J, of Okayama, for nearly an hour on 28 Mc., one of the best QSOs the had for the year. He had a weekly sked each Sunday at 3 p.m. local time. Most times they make contact, so the old 10x band is not as bad as it seems.—3ZCG.

MIDLAND ZONE

Activities in the zone have been mainly on 80 and 40 mX, with a few on 30 mX. The band is the backbone of the present zone activities. Col 3FO is active on 80 and 2 mX also, together with 3APJ, 3AHA, 3ZIK, 3ZLJ and 3ZIV.

Conditions on 40 mX have not been very stable, VK3 and VK3 being the only areas transmitting on 80 mX, but listen there regularly. By the time these notes are in print there will be a 3A4 on vacation, departing from the land of rain on 31st Aug. and returning on 1st October.

We will also have held our general meeting of the Midland Zone at the residence of Peter 3JRP, on 17/9. News from this meeting will appear in the next issue.

What about some news from zone members on general activities? You are unable to contact me directly, Jim 3SV will hand the info. on to me. 72, 3ND.

WESTERN ZONE

We have decided to hold our Annual Convention on Sunday, 28th October, and the location will be Murton. This spot is rather remote, but it is a good one, and perhaps a little far for the metropolitan chaps. However, distance will not be much of a problem for most of our members, who will attend per light aircraft, working mobile on the way. Will give more details in next month's "A.R." and "A.O.C." broadcasts.

A couple of our members have been active on the new 160 mX band with very encouraging results. This band may prove very handy in the near future. Chas. 3IB is on the air from a new site, however, the new site and antenna system is very limited so is not very active. We offer congratulations to Chas and Audrey on the arrival of another son—3AKW.

GEELONG AMATEUR RADIO CLUB

The Geelong Amateur Radio Club held its annual meeting on 27th Aug. at the studios of the local b.c. station 3GL. Club President, Jack 3ALP, chaired the meeting. Jack presented to members the annual report, and commented on the club's activities during the past year the club had encountered numerous setbacks, not the least being the loss of the club rooms. However, the newly acquired 2x room and shop helped compensate for this loss. The club station, 3ATL, along with a number of members' stations, took part in the annual Field Day with 3ATL/P at the You-Yangs, also the Jamboree of the Air with portable operation from various Scout Halls. The club badge was announced and the club's future was discussed.

The following office-bearers were elected for the ensuing 12 months: President, Alf 3AJF; Vice-President, Dick 3JL; Secretary, Bob 3JL; treasurer, Dick 3ABK; Treasurer, Harry 3ASJ;

Assistant, Vic Clark; Publicity Officer, Daryl 3BNC; Assistant, Jim 3ABT; Auditor, Geoff 3ABN; and General Secretary, Peter 3ABN. Bob 3IC, and Frank Roca; Librarian and Equipment Officer, Eric 3XL.

QUEENSLAND

Business officially this month starts with the July Council meeting, held on 19th. The meeting was held at the Queensland Club, where member licenses in Queensland, giving reason why they should be members of the Institute and of the quick response to them with letters of recommendation. The meeting was presided over by the P.M.G. Department had advised that Peter 4PJ had been chosen to fill the vacancy on the Queensland Council. The meeting was held at a sub-committee handling the constitution review.

The Council was told the following had so far been given S.W.I. Numbers beginning with 14001: W. Neill, K. King, D. Neill, Nees, J. S. Luck, R. Campbell, L. Lane, L. Haagsma, N. Fenton, G. Franks, G. Millner, and C. Charles. Alf 4LT was nominated as the new Federal Executive Officer, and after the first nominations, he was elected. It was moved that the motion on the use of the 25 to 29.7 Mc. band be adopted. The next general meeting be forwarded to the authorities.

MONTHLY MEETING

The regular monthly meeting held on 27th July attracted the good proportional attendance of about 40. The meeting adopted the following for membership as recommended by Council: 40S: D. J. H. Gemmell, 4ZEX; G. B. H. Gray, 4JP; R. Lyon, 4ZFL; J. C. Baird, 4ZBB; D. Neill, 4ZAG, 4ZDM; and associates: A. Beimers, V. G. Wright, W. Dalgleish, D. W. L. Condie, C. C. McDonough, D. Marcus, and J. Farrow.

The meeting was told there was always a need for technical articles in Amateur publications. Pat 4KB said it was inevitable that these had been adopted. The meeting was told for they had been covered before. However, he suggested someone might have a new approach. Major articles should go to "A.R." and "A.O.C." and be adopted. The meeting was made of a discussion on a technical subject on the 4W1 hook-up each Sunday. What do you think?

Main business of the night was a discussion of the operation of the Hallicrafters SX115 rx. The motion was moved to the Brisbane for the meeting and thanks go to George GJ for arranging this and also to Vince 4VJ for the discussion.

AUGUST COUNCIL

The August Council meeting was held in the Institute of Engineers' rooms on 10th August. At this, the names of 21 new applicants and their members were presented to the Council, recommended for acceptance by the general meeting. They are 4MR, 4FM, 4UT, 4ZM, 4ZRS, 4BM, 4G, 4LM, 4A, 4B, 4C, 4D, 4E, 4F, 4G, 4H, 4I, 4J, 4K, 4L, 4M, 4N, 4O, 4P, 4Q, 4R, 4S, 4T, 4U, 4V, 4W, 4X, 4Y, 4Z, 4AA, 4AB, 4AC, 4AD, 4AE, 4AF, 4AG, 4AH, 4AI, 4AJ, 4AK, 4AL, 4AM, 4AN, 4AO, 4AP, 4AQ, 4AR, 4AS, 4AT, 4AU, 4AV, 4AW, 4AX, 4AY, 4AZ, 4BA, 4BB, 4BC, 4BD, 4BE, 4BF, 4BG, 4BH, 4BI, 4BJ, 4BK, 4BL, 4BM, 4BN, 4BO, 4BP, 4BQ, 4BR, 4BS, 4BT, 4BU, 4BV, 4BW, 4BX, 4BY, 4BZ, 4CA, 4CB, 4CC, 4CD, 4CE, 4CF, 4CG, 4CH, 4CI, 4CJ, 4CK, 4CL, 4CM, 4CN, 4CO, 4CP, 4CQ, 4CR, 4CS, 4CT, 4CU, 4CV, 4CW, 4CX, 4CY, 4CZ, 4DA, 4DB, 4DC, 4DD, 4DE, 4DF, 4DG, 4DH, 4DI, 4DJ, 4DK, 4DL, 4DM, 4DN, 4DO, 4DP, 4DQ, 4DR, 4DS, 4DT, 4DU, 4DV, 4DW, 4DX, 4DY, 4DZ, 4EA, 4EB, 4EC, 4ED, 4EE, 4EF, 4EG, 4EH, 4EI, 4EJ, 4EK, 4EL, 4EM, 4EN, 4EO, 4EP, 4EQ, 4ER, 4ES, 4ET, 4EU, 4EV, 4EW, 4EX, 4EY, 4EZ, 4FA, 4FB, 4FC, 4FD, 4FE, 4FF, 4FG, 4FH, 4FI, 4FJ, 4FK, 4FL, 4FM, 4FN, 4FO, 4FP, 4FQ, 4FR, 4FS, 4FT, 4FU, 4FV, 4FW, 4FX, 4FY, 4FZ, 4GA, 4GB, 4GC, 4GD, 4GE, 4GF, 4GG, 4GH, 4GI, 4GJ, 4GK, 4GL, 4GM, 4GN, 4GO, 4GP, 4GQ, 4GR, 4GS, 4GT, 4GU, 4GV, 4GW, 4GX, 4GY, 4GZ, 4HA, 4HB, 4HC, 4HD, 4HE, 4HF, 4HG, 4HH, 4HI, 4HJ, 4HK, 4HL, 4HM, 4HN, 4HO, 4HP, 4HQ, 4HR, 4HS, 4HT, 4HU, 4HV, 4HW, 4HX, 4HY, 4HZ, 4IA, 4IB, 4IC, 4ID, 4IE, 4IF, 4IG, 4IH, 4II, 4IJ, 4IK, 4IL, 4IM, 4IN, 4IO, 4IP, 4IQ, 4IR, 4IS, 4IT, 4IU, 4IV, 4IW, 4IX, 4IY, 4IZ, 4JA, 4JB, 4JC, 4JD, 4JE, 4JF, 4JG, 4JH, 4JI, 4JJ, 4JK, 4JL, 4JM, 4JN, 4JO, 4JP, 4JQ, 4JR, 4JS, 4JT, 4JU, 4JV, 4JW, 4JX, 4JY, 4JZ, 4KA, 4KB, 4KC, 4KD, 4KE, 4KF, 4KG, 4KH, 4KI, 4KJ, 4KK, 4KL, 4KM, 4KN, 4KO, 4KP, 4KQ, 4KR, 4KS, 4KT, 4KU, 4KV, 4KW, 4KX, 4KY, 4KZ, 4LA, 4LB, 4LC, 4LD, 4LE, 4LF, 4LG, 4LH, 4LI, 4LJ, 4LK, 4LL, 4LM, 4LN, 4LO, 4LP, 4LQ, 4LR, 4LS, 4LT, 4LU, 4LV, 4LW, 4LX, 4LY, 4LZ, 4MA, 4MB, 4MC, 4MD, 4ME, 4MF, 4MG, 4MH, 4MI, 4MJ, 4MK, 4ML, 4MN, 4MO, 4MP, 4MQ, 4MR, 4MS, 4MT, 4MU, 4MV, 4MW, 4MX, 4MY, 4MZ, 4NA, 4NB, 4NC, 4ND, 4NE, 4NF, 4NG, 4NH, 4NI, 4NJ, 4NK, 4NL, 4NM, 4NO, 4NP, 4NQ, 4NR, 4NS, 4NT, 4NU, 4NV, 4NW, 4NX, 4NY, 4NZ, 4OA, 4OB, 4OC, 4OD, 4OE, 4OF, 4OG, 4OH, 4OI, 4OJ, 4OK, 4OL, 4OM, 4ON, 4OO, 4OP, 4OQ, 4OR, 4OS, 4OT, 4OU, 4OV, 4OW, 4OX, 4OY, 4OZ, 4PA, 4PB, 4PC, 4PD, 4PE, 4PF, 4PG, 4PH, 4PI, 4PJ, 4PK, 4PL, 4PM, 4PN, 4PO, 4PP, 4PQ, 4PR, 4PS, 4PT, 4PU, 4PV, 4PW, 4PX, 4PY, 4PZ, 4QA, 4QB, 4QC, 4QD, 4QE, 4QF, 4QG, 4QH, 4QI, 4QJ, 4QK, 4QL, 4QM, 4QN, 4QO, 4QP, 4QQ, 4QR, 4QS, 4QT, 4QU, 4QV, 4QW, 4QX, 4QY, 4QZ, 4RA, 4RB, 4RC, 4RD, 4RE, 4RF, 4RG, 4RH, 4RI, 4RJ, 4RK, 4RL, 4RM, 4RN, 4RO, 4RP, 4RQ, 4RR, 4RS, 4RT, 4RU, 4RV, 4RW, 4RX, 4RY, 4RZ, 4SA, 4SB, 4SC, 4SD, 4SE, 4SF, 4SG, 4SH, 4SI, 4SJ, 4SK, 4SL, 4SM, 4SN, 4SO, 4SP, 4SQ, 4SR, 4SS, 4ST, 4SU, 4SV, 4SW, 4SX, 4SY, 4SZ, 4TA, 4TB, 4TC, 4TD, 4TE, 4TF, 4TG, 4TH, 4TI, 4TJ, 4TK, 4TL, 4TM, 4TN, 4TO, 4TP, 4TQ, 4TR, 4TS, 4TT, 4TU, 4TV, 4TW, 4TX, 4TY, 4TZ, 4UA, 4UB, 4UC, 4UD, 4UE, 4UF, 4UG, 4UH, 4UI, 4UJ, 4UK, 4UL, 4UM, 4UN, 4UO, 4UP, 4UQ, 4UR, 4US, 4UT, 4UU, 4UV, 4UW, 4UX, 4UY, 4UZ, 4VA, 4VB, 4VC, 4VD, 4VE, 4VF, 4VG, 4VH, 4VI, 4VJ, 4VK, 4VL, 4VM, 4VN, 4VO, 4VP, 4VQ, 4VR, 4VS, 4VT, 4VU, 4VV, 4VW, 4VX, 4VY, 4VZ, 4WA, 4WB, 4WC, 4WD, 4WE, 4WF, 4WG, 4WH, 4WI, 4WJ, 4WK, 4WL, 4WM, 4WN, 4WO, 4WP, 4WQ, 4WR, 4WS, 4WT, 4WU, 4WV, 4WW, 4WX, 4WY, 4WZ, 4XA, 4XB, 4XC, 4XD, 4XE, 4XF, 4XG, 4XH, 4XI, 4XJ, 4XK, 4XL, 4XM, 4XN, 4XO, 4XP, 4XQ, 4XR, 4XS, 4XT, 4XU, 4XV, 4XW, 4XX, 4XY, 4XZ, 4YA, 4YB, 4YC, 4YD, 4YE, 4YF, 4YG, 4YH, 4YI, 4YJ, 4YK, 4YL, 4YM, 4YN, 4YO, 4YP, 4YQ, 4YR, 4YS, 4YT, 4YU, 4YV, 4YW, 4YX, 4YY, 4YZ, 4ZA, 4ZB, 4ZC, 4ZD, 4ZE, 4ZF, 4ZG, 4ZH, 4ZI, 4ZJ, 4ZK, 4ZL, 4ZM, 4ZN, 4ZO, 4ZP, 4ZQ, 4ZR, 4ZS, 4ZT, 4ZU, 4ZV, 4ZW, 4ZX, 4ZY, 4ZZ, 5AA, 5AB, 5AC, 5AD, 5AE, 5AF, 5AG, 5AH, 5AI, 5AJ, 5AK, 5AL, 5AM, 5AN, 5AO, 5AP, 5AQ, 5AR, 5AS, 5AT, 5AU, 5AV, 5AW, 5AX, 5AY, 5AZ, 5BA, 5BB, 5BC, 5BD, 5BE, 5BF, 5BG, 5BH, 5BI, 5BJ, 5BK, 5BL, 5BM, 5BN, 5BO, 5BP, 5BQ, 5BR, 5BS, 5BT, 5BU, 5BV, 5BW, 5BX, 5BY, 5BZ, 5CA, 5CB, 5CC, 5CD, 5CE, 5CF, 5CG, 5CH, 5CI, 5CJ, 5CK, 5CL, 5CM, 5CN, 5CO, 5CP, 5CQ, 5CR, 5CS, 5CT, 5CU, 5CV, 5CW, 5CX, 5CY, 5CZ, 5DA, 5DB, 5DC, 5DD, 5DE, 5DF, 5DG, 5DH, 5DI, 5DJ, 5DK, 5DL, 5DM, 5DN, 5DO, 5DP, 5DQ, 5DR, 5DS, 5DT, 5DU, 5DV, 5DW, 5DX, 5DY, 5DZ, 5EA, 5EB, 5EC, 5ED, 5EE, 5EF, 5EG, 5EH, 5EI, 5EJ, 5EK, 5EL, 5EM, 5EN, 5EO, 5EP, 5EQ, 5ER, 5ES, 5ET, 5EU, 5EV, 5EW, 5EX, 5EY, 5EZ, 5FA, 5FB, 5FC, 5FD, 5FE, 5FF, 5FG, 5FH, 5FI, 5FJ, 5FK, 5FL, 5FM, 5FN, 5FO, 5FP, 5FQ, 5FR, 5FS, 5FT, 5FU, 5FV, 5FW, 5FX, 5FY, 5FZ, 5GA, 5GB, 5GC, 5GD, 5GE, 5GF, 5GG, 5GH, 5GI, 5GJ, 5GK, 5GL, 5GM, 5GN, 5GO, 5GP, 5GQ, 5GR, 5GS, 5GT, 5GU, 5GV, 5GW, 5GX, 5GY, 5GZ, 5HA, 5HB, 5HC, 5HD, 5HE, 5HF, 5HG, 5HI, 5HJ, 5HK, 5HL, 5HM, 5HN, 5HO, 5HP, 5HQ, 5HR, 5HS, 5HT, 5HU, 5HV, 5HW, 5HX, 5HY, 5HZ, 5IA, 5IB, 5IC, 5ID, 5IE, 5IF, 5IG, 5IH, 5II, 5IJ, 5IK, 5IL, 5IM, 5IN, 5IO, 5IP, 5IQ, 5IR, 5IS, 5IT, 5IU, 5IV, 5IW, 5IX, 5IY, 5IZ, 5JA, 5JB, 5JC, 5JD, 5JE, 5JF, 5JG, 5JH, 5JI, 5JJ, 5JK, 5JL, 5JM, 5JN, 5JO, 5JP, 5JQ, 5JR, 5JS, 5JT, 5JU, 5JV, 5JW, 5JX, 5JY, 5JZ, 5KA, 5KB, 5KC, 5KD, 5KE, 5KF, 5KG, 5KH, 5KI, 5KJ, 5KL, 5KM, 5KN, 5KO, 5KP, 5KQ, 5KR, 5KS, 5KT, 5KU, 5KV, 5KW, 5KX, 5KY, 5KZ, 5LA, 5LB, 5LC, 5LD, 5LE, 5LF, 5LG, 5LH, 5LI, 5LJ, 5LK, 5LL, 5LM, 5LN, 5LO, 5LP, 5LQ, 5LR, 5LS, 5LT, 5LU, 5LV, 5LW, 5LX, 5LY, 5LZ, 5MA, 5MB, 5MC, 5MD, 5ME, 5MF, 5MG, 5MH, 5MI, 5MJ, 5MK, 5ML, 5MN, 5MO, 5MP, 5MQ, 5MR, 5MS, 5MT, 5MU, 5MV, 5MW, 5MX, 5MY, 5MZ, 5NA, 5NB, 5NC, 5ND, 5NE, 5NF, 5NG, 5NH, 5NI, 5NJ, 5NK, 5NL, 5NM, 5NO, 5NP, 5NQ, 5NR, 5NS, 5NT, 5NU, 5NV, 5NW, 5NX, 5NY, 5NZ, 5OA, 5OB, 5OC, 5OD, 5OE, 5OF, 5OG, 5OH, 5OI, 5OJ, 5OK, 5OL, 5OM, 5ON, 5OO, 5OP, 5OQ, 5OR, 5OS, 5OT, 5OU, 5OV, 5OW, 5OX, 5OY, 5OZ, 5PA, 5PB, 5PC, 5PD, 5PE, 5PF, 5PG, 5PH, 5PI, 5PJ, 5PK, 5PL, 5PM, 5PN, 5PO, 5PP, 5PQ, 5PR, 5PS, 5PT, 5PU, 5PV, 5PW, 5PX, 5PY, 5PZ, 5QA, 5QB, 5QC, 5QD, 5QE, 5QF, 5QG, 5QH, 5QI, 5QJ, 5QK, 5QL, 5QM, 5QN, 5QO, 5QP, 5QQ, 5QR, 5QS, 5QT, 5QU, 5QV, 5QW, 5QX, 5QY, 5QZ, 5RA, 5RB, 5RC, 5RD, 5RE, 5RF, 5RG, 5RH, 5RI, 5RJ, 5RK, 5RL, 5RM, 5RN, 5RO, 5RP, 5RQ, 5RR, 5RS, 5RT, 5RU, 5RV, 5RW, 5RX, 5RY, 5RZ, 5SA, 5SB, 5SC, 5SD, 5SE, 5SF, 5SG, 5SH, 5SI, 5SJ, 5SK, 5SL, 5SM, 5SN, 5SO, 5SP, 5SQ, 5SR, 5SS, 5ST, 5SU, 5SV, 5SW, 5SX, 5SY, 5SZ, 5TA, 5TB, 5TC, 5TD, 5TE, 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6AX, 6AY, 6AZ, 6BA, 6BB, 6BC, 6BD, 6BE, 6BF, 6BG, 6BH, 6BI, 6BJ, 6BK, 6BL, 6BM, 6BN, 6BO, 6BP, 6BQ, 6BR, 6BS, 6BT, 6BU, 6BV, 6BW, 6BX, 6BY, 6BZ, 6CA, 6CB, 6CC, 6CD, 6CE, 6CF, 6CG, 6CH, 6CI, 6CJ, 6CK, 6CL, 6CM, 6CN, 6CO, 6CP, 6CQ, 6CR, 6CS, 6CT, 6CU, 6CV, 6CW, 6CX, 6CY, 6CZ, 6DA, 6DB, 6DC, 6DD, 6DE, 6DF, 6DG, 6DH, 6DI, 6DJ, 6DK, 6DL, 6DM, 6DN, 6DO, 6DP, 6DQ, 6DR, 6DS, 6DT, 6DU, 6DV, 6DW, 6DX, 6DY, 6DZ, 6EA, 6EB, 6EC, 6ED, 6EE, 6EF, 6EG, 6EH, 6EI, 6EJ, 6EK, 6EL, 6EM, 6EN, 6EO, 6EP, 6EQ, 6ER, 6ES, 6ET, 6EU, 6EV, 6EW, 6EX, 6EY, 6EZ, 6FA, 6FB, 6FC, 6FD, 6FE, 6FF, 6FG, 6FH, 6FI, 6FJ, 6FK, 6FL, 6FM, 6FN, 6FO, 6FP, 6FQ, 6FR, 6FS, 6FT, 6FU, 6FV, 6FW, 6FX, 6FY, 6FZ, 6GA, 6GB, 6GC, 6GD, 6GE, 6GF, 6GG, 6GH, 6GI, 6GJ, 6GK, 6GL, 6GM, 6GN, 6GO, 6GP, 6GQ, 6GR, 6GS, 6GT, 6GU, 6GV, 6GW, 6GX, 6GY, 6GZ, 6HA, 6HB, 6HC, 6HD, 6HE, 6HF, 6HG, 6HI, 6HJ, 6HK, 6HL, 6HM, 6HN, 6HO, 6HP, 6HQ, 6HR, 6HS, 6HT, 6HU, 6HV, 6HW, 6HX, 6HY, 6HZ, 6IA, 6IB, 6IC, 6ID, 6IE, 6IF, 6IG, 6IH, 6II, 6IJ, 6IK, 6IL, 6IM, 6IN, 6IO, 6IP, 6IQ, 6IR, 6IS, 6IT, 6IU, 6IV, 6IW, 6IX, 6IY, 6IZ, 6JA, 6JB, 6JC, 6JD, 6JE, 6JF, 6JG, 6JH, 6JI, 6JJ, 6JK, 6JL, 6JM, 6JN, 6JO, 6JP, 6JQ, 6JR, 6JS, 6JT, 6JU, 6JV, 6JW, 6JX, 6JY, 6JZ, 6KA, 6KB, 6KC, 6KD, 6KE, 6KF, 6KG, 6KH, 6KI, 6KJ, 6KL, 6KM, 6KN, 6KO, 6KP, 6KQ, 6KR, 6KS, 6KT, 6KU, 6KV, 6KW, 6KX, 6KY, 6KZ, 6LA, 6LB, 6LC, 6LD, 6LE, 6LF, 6LG, 6LH, 6LI, 6LJ, 6LK, 6LL, 6LM, 6LN, 6LO, 6LP, 6LQ, 6LR, 6LS, 6LT, 6LU, 6LV, 6LW, 6LX, 6LY, 6LZ, 6MA, 6MB, 6MC, 6MD, 6ME, 6MF, 6MG, 6MH, 6MI, 6MJ, 6MK, 6ML, 6MN, 6MO, 6MP, 6MQ, 6MR, 6MS, 6MT, 6MU, 6MV, 6MW, 6MX, 6MY, 6MZ, 6NA, 6NB, 6NC, 6ND, 6NE, 6NF, 6NG, 6NH, 6NI, 6NJ, 6NK, 6NL, 6NM, 6NO, 6NP, 6NQ, 6NR, 6NS, 6NT, 6NU, 6NV, 6NW, 6NX, 6NY, 6NZ, 6OA, 6OB, 6OC, 6OD, 6OE, 6OF, 6OG, 6OH, 6OI, 6OJ, 6OK, 6OL, 6OM, 6ON, 6OO, 6OP, 6OQ, 6OR, 6OS, 6OT, 6OU, 6OV, 6OW, 6OX, 6OY, 6OZ, 6PA, 6PB, 6PC, 6PD, 6PE, 6PF, 6PG, 6PH, 6PI, 6PJ, 6PK, 6PL, 6PM, 6PN, 6PO, 6PP, 6PQ, 6PR, 6PS, 6PT, 6PU, 6PV, 6PW, 6PX, 6PY, 6PZ, 6QA, 6QB, 6QC, 6QD, 6QE, 6QF, 6QG, 6QH, 6QI, 6QJ, 6QK, 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new call signs on the bands before too long. The club's members elected Jack 4Z as President for the next year; Jim Green, Secretary; Tony 4ZTC, Treasurer; and Brian 4UW and Alex McNaughton as members. The President's report for 1981 makes interesting reading for what a small club can do. 73, Don.

SOUTH COAST ZONE

No improvement in conditions here has been noticed, in fact they are reaching an all time low as regards contacts with others in our zone. The apocryphal Jack 4Z said, "I'm QSL Officer, cards for this area will be forwarded to me for distribution. This shall be done personally when and where possible. Those expecting cards should they be in town will be welcome to call on me and pick their cards up."

2ACQ and Ethel passed through recently on their way home after a grand trip in the Sunshine State, which they thoroughly enjoyed. They were followed the next day by Bob 2IN and Daphne on the homeward trek. Both families should now be safely ensconced in their own homes. However Frank's itchy feet have him on his way to Gundagai for the Convention to be held there at the end of September. 73, 4WS.

TOWNSVILLE AND DISTRICT

News from Ayr and District is as follows: Frank 4CW will have been on for the R.D. Contest using a brand new home-brew tx.

A t.v.i. committee has been formed to help when the annual election for the Serp. is being held. This committee, with plenty of publicity in the local press, will help to ensure that the Serp. is a success. It is not clear that he is not held responsible for all the interference that may occur.

They also hope to hold a Convention in Sept. A Crt. assn. have started allowing local members. The local side will be looked after by 4OJ and 4ZFA, and fox hunts, etc., will be organised by 4ZBG, 4UX and associate Harold 4CQ.

Claude hopes that all the six students will face the barrier first exam. In the New Year, Good Luck.

Just heard that Bert 4LB has been in hospital for the past fortnight, and if I didn't hear otherwise would have come up and sat on the bed and consoled you. Glad to report that he is now home and back on his feet. He again looked forward to the R.D. Contest. Believe that John 4DD had a trip to Thursday Island and all the time he was away he was regarding its legality had died down, they promised to consider the application. Now in view of their "Letter" to the VK3 Council on the time he was away, it seems that the getting things done, I don't know just what to do. Perhaps I could wait another six months or so, and see what happens or am I being just a little impatient? Life gets tedious, does it not?

It seems that the Rocky boys will grab all the gigs passing and let no r.f. past them. Share it length and make a place.

No information if the local club is forming a t.v.i. committee. A lot of spare time will be required to help out, or are we hoping that the club will be able to handle the problems? Hope so, but still will get the odd complaint that it is the Amateur if the picture falls. 73, 4RW.

SOUTH AUSTRALIA

The monthly general meeting of the VK3 Division, the Division with not too much sun or rain, in fact just right, was held to a very representative gathering of members and visitors. The speaker was the newly elected president (SMF), who gave an interesting and informative talk on various types of s.a.b. tx's and associated gear. Al made a most useful and unusual approach to his topic, instructing me that he had already prepared a number of block diagrams on paper of commercial s.a.b. set-ups, and that he would be happy to show them to any of us, displaying a wealth of knowledge of his subject, which clearly indicated the time and precision with which he devoted to his hobby. Judging by the quietness of the audience during the talk, together with the number of intelligent questions asked at its conclusion, it was not surprising that the speaker was, by themselves, which was amply demonstrated by the applause which followed the vote of thanks to the speaker, and the presentation of a Ham 5MY. Al also brought along for demonstration purposes his own constructed s.a.b. table-top set-up, which, if I might say so, was by no means a simple task. It was clear that it was necessary, that he sure had a thorough grasp of his subject. A good night's entertainment. Al.

Now at this point appreciative reference should be made to the fact that the XYL of Brian SCA, Marlene, acted as minute secretary at the meeting and, I am informed by my app

planted in Council, is also acting as minute secretary to that august body. Marlene does a terrific amount of work for the Division, mainly in assisting Brian with the publishing of the Divisional Journal, etc., etc., and I personally have nothing but admiration for her efforts.

Roy SDA was sighted this month passing through Renmark on his way to the temptations and frustrations of VK4. I wonder how long he intends staying over there, but if he takes my advice he will take care when he crosses any of their bridges! (Sticks and stones may break your bones, etc., but cracks are forbidden—Ed.)

Comps SEF was another to visit Renmark and during the lunch hour, when Tom 5TL was in the kitchen, he heard Comps SEF who opened up full blast with his mobile s.a.b. rig with a consequent bluing at the sides of Tom's rx. When Tom asked a quick quick-quick beam and Tom went white and shivers from head to foot. How could you, Comps?

Fred SMA has been heard on 3.5 Mc. at times, and from his conversation it would appear that he is thinking along the lines of the power supply described in this magazine recently. It will certainly save having to carry a battery, and Fred has been mentioned as the writer of the article assures he did. Erg 5KU is not very active on the air these days. Claude SCH is heard occasionally on 7 Mc. and, usually, on 3.5 Mc. and 5 Mc. meter. Leo 5GJ is still under the influence of the "Google Box", and has not been to a local spot meeting for some time. I wonder who really does not come under my searching glance because of the Z call, but then I will do anything to fill this column, now has his 6 Mc. and, when he gets over a 6 element beam and is now working on the converter.

Col 5CJ is to be heard regularly on the well known "lunch time" session, but his main activity is in districting, and he is moving to the next v.h.f. season. Col, whatever did happen to that budgie? You know, the one that got away, did it?

John 5KX and Ken 5KC have been chosen to attend the next Radiological Reconnaissance Course to be held at Mount Macedon in connection with W.I.C.N. Of course by the time the time has come, I will be long gone, but as I have said before, I never miss a chance to fill this column.

I don't know whether to write a "Letter" to Elizabeth or not. Some two months ago I made an application to them for their worked all Elizabeth award, and all the time I was waiting for a reply, and regarding its legality had died down, they promised to consider the application. Now in view of their "Letter" to the VK3 Council on the time he was away, it seems that the getting things done, I don't know just what to do. Perhaps I could wait another six months or so, and see what happens or am I being just a little impatient? Life gets tedious, does it not?

Clive SPE has taken the much sought after gig of 5W1 to his home, and got on reports, plus what I have heard of the session, is doing an f.b. job. As you can well imagine he was nearly killed by his boom, and got on reports, and several applicants for the job are still licking their wounds. Excuse my mirth, but all jokes aside, he is to be complimented for attempting to do so much, and for the associated chores, and it now remains up to all the Divisional members to keep him flooded with news and reports, and to be a member of the session. No matter how good he is, nor how hard he works, without a number of shoulders to the wheel he must find the time to do so. I am sure that he is, and was saying just how the session should be handled to several at the meeting, and when I suggested that he might like to say to Clive each week with information or perhaps some newsy paragraphs, he looked at me as if I had just escaped from the nut factory, and then he said, "I am not going to say to my palsy-wally 6LS that he must expect only criticism of his efforts, no matter how good, but always remember that he will receive his reward in heaven. Perhaps!"

Talking of VK6, I notice with some envy that their 20th member was the Rev. Brother McKAY. SDA was a member of the church from a memory lapse he is a one-time VK3 who called in to see me some years ago when he was in the States. I am sure that he is in VK (My, how it's climbed—Ed.) was situated on top of the C.M.L. in King William St. We had a long chat about Amateur Radio and sundry subjects at the time, and despite

the fact that he was a VK3, I was very pleased to make his acquaintance. I was right, then VK6's gain is our loss, although how he came to go to VK6 after having to pass through VK3 will always amaze me. Salutations to the Rev. Brother McKAY, and a warm welcome to the VK3.

So the VK3 notes squeezed out SPS recently did they? Har, har, that's what you think. I was in the VK3 notes, and I was all nicely and neatly tied up when I left for my holidays, but someone undid the pretty blue ribbons, and everything went up the wall. Well, I am sure that the VK3 will be graciously print H, I would tell you just what I said in certain quarters when I returned to the VK3. Well, I am sure that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

Neil 5GSG on 3.5 Mc. at the other Sunday in districting, when Charlie 3ACR and George was quoting a well known fact that if one leaves 1 Mc. for very long, one soon loses contact with a long list of friends made on this band. George was declaring his intention of working more on this band many friends contacted. I also heard Vic 6JT selling the VK3. I heard on 3.5 Mc. (Vic) had been finished a contact with his one-time foreman, Charlie 3ON, and from what he said, this was a real shock. I must have been a somewhat rare type of foreman. Vic said he was very sorry when he retired. Well, below me down, I am sure that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

Neil 5WN heard also on 7 Mc. in QSO with Frank 5W1, and you might be interested to know that I picked him up as soon as I heard it, long before you signed. A good and solid signal, OM.

Finally, as the lights are turned off, when the windows are closed and barred, and no man's footsteps disturb the silence of the night, I turn on my b.f.o. and revolve, I think, I pick up whatever it is that I get some sense out of the quick-quick that comes out of the speaker. Always when I do so, I am sure that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

This time it was Ron 5GM who was nobly calling CQ DX on the high end of 7 Mc., and I was in it, in an exceedingly high spirit. I was, I am sure, that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

On page 4 of the June issue of "A.R." is an article on the founding of the "Let's New Mixer Circuit", which, I might be permitted to say, is a "Wow!" I scrapped my 6AC7 mixer and replaced it with the one that I had in the "Let's New Mixer Circuit" to the claims of the writer, and then some. Dave 3DS and Joe 5RC commented highly on it, and I am sure that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

Believe it or not, the issue of "A.R." for August was without any reference, oblique or otherwise, to my humble self from any of the Divisions that have been sniping at me for some time. I am sure that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

reference to my ability to work DX, from none other than my buddy (the Greeks have a word for it) and I am sure that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

What am I saying? 73, de SPS—Fanny to you. I am sure that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

WESTERN AUSTRALIA

Well the cloak and dagger boys are really starting to work for me now. I am getting a network of contacts everywhere. I am sure that the VK3 will be all you dragons doing that blather. I'd worry you'd worry you'd worry, do you want to get like the banana-eaters!!!!

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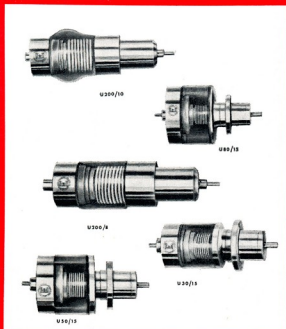
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The extensive range of electronic products marketed by AWV now includes a series of high vacuum variable capacitors manufactured by the English Electric Valve Co. Ltd. These capacitors have been developed and designed for operation in high voltage r.f. circuits and give an approximately linear variation of capacitance with tuning shaft turns.

Type	Capacitance range		Shaft turns		Max. peak r.f. voltage (kV)	Max. r.f. current (r.m.s.) (A)	Max. length (in.)	Max. dia. (in.)
	Overall (pF)	Linear (approx) (pF)	Overall	Linear				
U300/15	3-34	5-30	13.75	10.4	15 or 20	20*	6.5	2.13
U50/15	5-58	8-50	13.75	10.4	15 or 20	30*	6.5	2.75
U80/15	7-89	16-80	13.75	10.4	15 or 20	40*	6.5	3.30
U200/8	5.5-206	20-206	17	15	8	20†	8.78	2.49
U200/10	5.5-206	20-206	17	15	10 or 15	40†	9.06	3.50
U240/15	10-240	25-240	34	31	15	50*	8.0	4.06
U400/8	10-400†	24-400	22	20	8 or 10	40†	9.188	3.30

* up to 30 Mc/s

† up to 20 Mc/s

‡ Slight mechanical modification permits extension of range.

High vacuum variable capacitors offer outstanding advantages over conventional air dielectric counterparts:

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